Draft
Environmental Assessment
The East Coast Home Basing
of
MQ-4C Triton Unmanned Aircraft System

September 2016

DRAFT
ENVIRONMENTAL ASSESSMENT

THE EAST COAST HOME BASING
of
MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM

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Abstract

Designation:	Environmental Assessment
Title of Proposed Action:	East Coast Home Basing of MQ-4C Triton Unmanned Aircraft System (UAS)
Project Location:	Naval Air Station (NAS) Key West, Florida; Naval Station (NS) Mayport, Florida; and National Aeronautics and Space Administration (NASA) Wallops Flight Facility (WFF), Virginia
Lead Agency for the EA:	Department of the Navy
Cooperating Agency:	National Aeronautics and Space Administration
Affected Region:	Monroe and Duval Counties, Florida and Accomack County, Virginia
Action Proponent:	Commander, U.S. Fleet Forces Command
Point of Contact:	Navy MQ-4C Triton UAS Home Basing Project Manager Naval Facilities Engineering Command, Atlantic Division Attn: Code EV21JB 6506 Hampton Boulevard Norfolk, Virginia 23508
Date:	September 2016

The Department of the Navy, along with NASA, has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as implemented by the Council on Environmental Quality Regulations and Navy and NASA regulations for implementing NEPA. The Proposed Action would provide facilities and functions to home base, operate, and maintain the MQ-4C Triton Unmanned Aircraft System (Triton UAS) on the East Coast. Under this Proposed Action, the Navy plans to establish a launch and recovery site for four home based Triton UAS and support a consolidated maintenance hub for up to four additional aircraft undergoing maintenance actions. The East Coast home base location would be a permanent duty station for up to 400 personnel, plus family members, and would support rotational deployments of personnel and aircraft outside the continental United States. Military construction projects in support of the home basing would begin in 2017 and associated deployable fleet UAS assets would begin arriving in 2019, reaching a steady state of operations in the 2023 timeframe. This EA evaluates the potential environmental impacts associated with the three East Coast home base location alternatives (NAS Key West and NS Mayport in Florida, and NASA's WFF in Virginia), and the No Action Alternative. The following resource areas were identified as being potentially impacted by the Proposed Action: noise, public health and safety, air quality, biological resources, water resources, cultural resources, socioeconomics, transportation, and hazardous materials and wastes.

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Executive Summary

EXECUTIVE SUMMARY

ES.1 Proposed Action

The Proposed Action would provide facilities and functions to operate and maintain the MQ-4C Triton Unmanned Aircraft System (Triton UAS) on the East Coast. Under this Proposed Action, the Navy plans to establish a launch and recovery site for four home based MQ-4C Triton UAS and support a consolidated maintenance hub for up to four additional aircraft undergoing maintenance actions. The East Coast home base location will be a permanent duty station for up to 400 personnel, plus family members, and will support rotational deployments of personnel and aircraft outside the continental United States (OCONUS).

ES.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to locate an East Coast home base for the Triton UAS in order to enhance maritime intelligence, surveillance, and reconnaissance (ISR) capabilities as part of the Navy's Maritime Patrol and Reconnaissance Force in the Atlantic Fleet's area of operations. The program of record for the Triton UAS requires the establishment of two locations in the continental United States (CONUS) and three locations OCONUS to provide persistent maritime ISR capabilities. The selected West Coast location is Naval Base Ventura County Point Mugu, California, which was analyzed in a 2013 Environmental Assessment (EA). Its selection as the West Coast location was informed by a Finding of No Significant Impact signed on April 22, 2013.

ES.3 Alternatives Considered

Alternatives were developed for analysis based upon the following screening factors: geographic considerations (distance to airspace operations areas and response times), airspace and mission capability (access to overwater operating areas and/or located within or immediately adjacent to Restricted Area airspace, support compatible missions), and compatible facilities (ability to support operational timelines for operations, maintenance, and personnel by Fiscal Year (FY) 2019). Of the seven alternative sites that met the purpose of and need for the Proposed Action, three candidate sites were identified as meeting all of the screening factors and are analyzed within this EA as separate alternatives. These sites are Naval Air Station (NAS) Key West and Naval Station (NS) Mayport in Florida, and the National Aeronautics and Space Administration's (NASA) Wallops Flight Facility (WFF) in Virginia. Under the No Action Alternative, the Proposed Action would not occur; the Navy would not establish facilities or functions to support the East Coast home basing and maintaining of the Triton UAS or achieve the required levels of operational readiness for the Triton UAS. While the No Action Alternative would not meet the purpose of and need for the Proposed Action, it is required by National Environmental Policy Act (NEPA) to provide a baseline for measuring the environmental consequences of the action alternatives. The No Action Alternative, therefore, is carried forward for analysis in this EA.

ES.4 Summary of Environmental Resources Evaluated in the Environmental Assessment

Council on Environmental Quality (CEQ) regulations, NEPA, and Navy and NASA instructions for implementing NEPA, specify that an EA should address those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact.

The following resource areas have been addressed in this EA: noise, public health and safety, air quality, biological resources, water resources, cultural resources, socioeconomics, transportation, and hazardous materials and wastes. Because potential impacts were considered negligible or nonexistent, the following resources were not evaluated in this EA: airfield and airspace management, land use, infrastructure and utilities, recreation, community/emergency services, environmental justice, visual/aesthetic resources, and soils and topography.

ES.5 Summary of Potential Environmental Consequences of the Action Alternatives

ES.5.1 Noise

Under Alternative 1, NAS Key West, there would be short-term and temporary noise generated by construction equipment and activities. However, construction noise would not affect areas outside of installation boundaries. In terms of operational noise, the Triton UAS would create a less than 1-decibel (dB) Day-Night Average Sound Level (DNL) increase in noise levels, from the 3.5 percent increase in annual airfield operations. This increase would likely not be noticeable in an already active runway. Therefore, no significant noise impacts are anticipated under Alternative 1, NAS Key West.

Under Alternative 2, NS Mayport, there would be short-term and temporary noise generated by construction equipment and activities. However, construction noise would not affect areas outside of installation boundaries. In terms of operational noise, the Triton UAS would create a less than 1-dB DNL increase in noise levels, from the 1.7 percent increase in annual airfield operations. This increase would likely not be noticeable in an already active runway. Therefore, no significant noise impacts are anticipated under Alternative 2, NS Mayport.

Under Alternative 3, WFF, there would be short-term and temporary noise generated by construction equipment and activities. However, construction noise would not affect areas outside of installation boundaries. In terms of operational noise, the Triton UAS would create a less than 1-dB DNL increase in noise levels, from the 3.1 percent increase in annual airfield operations. This increase would likely not be noticeable in an already active runway. Therefore, no significant noise impacts are anticipated under Alternative 3, WFF.

ES.5.2 Public Health and Safety

During construction at any of the three action alternatives, Occupational Safety and Health Act regulations, procedures, and anti-terrorism/force protection requirements would be followed; therefore, no significant impacts to public health or safety are anticipated. Once operational, the addition of approximately five Triton UAS flight operations per day would represent a negligible increase in annual operations at any of the three airfields. This negligible increase in operations would not be expected to increase the risk of mishaps. No new on-base activities would occur in the current Accident Potential Zones (APZs), due to this action. Risks to persons and activities in the APZs would not change and therefore, no impacts are anticipated. The number of flight operations at any of the three locations is not expected to differ noticeably from baseline conditions and the Triton UAS aircraft would operate in the same airfield environment as existing aircraft. All installations have a Bird/Animal Aircraft Strike Hazard (BASH) Plan that is designed to minimize the occurrence of BASH. Procedures are in place (and would continue to be so) to identify increased risks and provide decision aids to aircrews in judging whether to alter or discontinue flying operations, as necessary. Therefore, no significant impacts are anticipated to public health and safety.

ES.5.3 Air Quality

Under the three action alternatives, there would be short-term and temporary pollutant emissions generated by construction activities. However, the Air Quality Control Regions (AQCRs) in which NAS Key West, NS Mayport, and WFF are located, are in attainment for all criteria air pollutants; therefore, the Proposed Action at any of the three alternative locations is not subject to the General Conformity Rule. Once operational, changes in emissions introduced by more aircraft operations and commuting personnel would be negligible. The Triton UAS spends the majority of its flight time above the emissions mixing height of 3,000 feet above ground level and commuting distances of increased numbers of personnel would not generate emissions that would deteriorate air quality in the respective AQCRs. None of the emissions would cause or contribute to a violation of any National or State Ambient Air Quality Standards. Therefore, no significant impacts to local or regional air quality would be expected.

ES.5.4 Biological Resources

Regardless of the alternative, no construction or operational activities would occur along the shoreline or in the marine environment.

Under Alternative 1, at NAS Key West, about 21 acres would be impacted; of which 2 acres are maintained/managed vegetation that would be removed when undergoing demolition and construction. Construction noise may result in minor behavioral disturbance of wildlife. However, no effects to feeding, sheltering, and reproduction are anticipated, and temporary alterations to behavior are expected to return to normal once construction is complete. Therefore, no significant impacts to wildlife species are anticipated. Pursuant to the Endangered Species Act (ESA) the proposed action may affect, but is not likely to adversely affect, listed species potentially occurring in the vicinity under Alternative 1. This alternative would have no effect on critical habitat, as none is located in the project area. The Navy initiated informal consultation with the USFWS South Florida Ecological Services Office on June 2, 2016; a response is pending. Pursuant to the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, no harm or incidental take of eagles or migratory birds is anticipated. In summary, no significant impacts are anticipated to biological resources under Alternative 1, NAS Key West.

Under Alternative 2 at NS Mayport, about 15 acres of maintained/managed vegetation would be removed during construction, of which 10 acres comprise planted slash pine. Adherence to the station's Forest Management Plan would ensure that there are no significant effects to on-station forested areas. Construction noise may result in minor behavioral disturbance. However, no effects to feeding, sheltering, and reproduction are anticipated, and temporary alterations to behavior would return to normal once construction is complete. Therefore, no significant impacts are anticipated to wildlife species. Pursuant to the ESA, the proposed action may affect, but is not likely to adversely affect, listed species under Alternative 2. This alternative would have no effect on critical habitat, as none is located in the project area. The Navy initiated informal consultation with the USFWS North Florida Ecological Services Office on June 10, 2016. On July 14, 2016, the USFWS concurred with the Navy findings. Pursuant to the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, no harm or incidental take of eagles or migratory birds is anticipated. In summary, no significant impacts are anticipated to biological resources under Alternative 2, NS Mayport.

Under Alternative 3 at WFF, about 5 acres of maintained/managed vegetation would be removed when undergoing demolition and construction. Under this alternative, construction noise may result in minor behavioral disturbance to wildlife. However, no effects to feeding, sheltering, and reproduction are anticipated, and temporary alterations to behavior would return to normal once construction is

complete. Therefore, no significant impacts are anticipated to wildlife species. Pursuant to the ESA, Alternative 3 and its environmental consequences would have no effect on federally listed species. Pursuant to the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, no harm or incidental take of eagles or migratory birds is anticipated. In summary, no significant impacts are anticipated to biological resources under Alternative 3 at the WFF.

ES.5.5 Water Resources

Under Alternative 1, NAS Key West, groundwater would not be affected during construction or once the Triton UASs are operational. Erosion and sedimentation controls would ensure no significant impacts to surface waters (with the exception of wetlands) would occur. Approximately 5 acres of impervious surfaces would be added to NAS Key West. Localized increases in stormwater run-off could potentially occur; however, any possible increases would not exceed the current capacities of stormwater systems at the Air Station. Retention structures would be provided to collect stormwater from the newly developed area. These structures would be designed to discharge no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Construction practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. Stormwater Best Management Practices and Standard Operating Procedures are detailed in the Air Station's Storm Water Pollution Prevention Plan (SWPPP). Additionally, a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development," would be used to minimize stormwater effects. These practices could include reducing impervious surfaces, using porous pavements, and installing cisterns. Aircraft operations would not affect groundwater, and erosion and sedimentation control measures would preclude adverse impacts to surface and stormwaters. Therefore, insignificant impacts to surface waters and stormwaters are anticipated by implementing Alternative 1, NAS Key West.

In terms of direct impacts to wetlands, a jurisdictional wetland delineation would be performed prior to the start of construction to determine the exact locations of wetlands in the project area, and to inform the permitting process should a permit be required. Indirect impacts to wetlands, including stormwater discharges or sedimentation, would be minimized through implementation of best management practices. Compliance with permit conditions and use of best management practices would minimize the potential for effects to wetlands and eliminate any net loss. Therefore, wetland impacts would not be significant. The entirety of the area proposed for development is located within the 100- and 500-year floodplains and in a designated storm surge area; therefore, no practicable alternative site on NAS Key West could be identified. As currently is the case for existing facilities, development at Boca Chica Airfield would expose the Triton UAS facilities and personnel to flooding and storm surge. However, if such inundation events were to occur, personnel would be evacuated and the aircraft flown to a safe location. Implementation of flood-protection measures would reduce effects to less than adverse if Alternative 1 at NAS Key West was implemented. In summary, no significant impacts are anticipated to water resources under Alternative 1, NAS Key West.

Additionally, a new sanitary sewer line would need to be installed to accommodate the increase of personnel in that part of Boca Chica Airfield. The lift station would be situated in the proposed parking area, follow an existing road for close to a half mile to Old Boca Chica Road, and then follow this road for about a mile to the municipal lift station on Boundary Lane at Geiger Key. The Florida Keys Aqueduct Authority would be responsible for the operation and maintenance of the wastewater system the line

would be joining. There is existing capacity in the municipal wastewater system to support this addition. In summary, Alternative 1 is not expected to exceed the current capacity of the infrastructure and utilities at NAS Key West and in the greater Lower Keys area.

Under Alternative 2 at NS Mayport, groundwater would not be affected during construction and surface waters would be directed to recharge areas. Approximately 8 acres of impervious surfaces would be added to NS Mayport. Localized increases in stormwater runoff could potentially occur; however, any possible increases would not exceed the current capacities of stormwater systems at the station. Retention structures would be provided to collect stormwater from the newly developed area. These structures would be designed to discharge no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Construction practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. Stormwater Best Management Practices and Standard Operating Procedures are detailed in the station's SWPPP. Additionally, a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development," would be used to minimize stormwater effects. These practices could include reducing impervious surfaces, using porous pavements, and installing cisterns. Implementing these measures would preclude significant adverse impacts to the lower St. Johns River during construction. Neither proposed construction activities nor operations would affect wetlands or floodplains under Alternative 2, NS Mayport.

Additionally, NS Mayport is currently subject to, and in compliance with, a Consent Order from the Florida Department of Environmental Protection relating to discharges from its wastewater treatment facility (WWTF). Pursuant to that consent order, a new WWTF will be constructed on the same site as the existing WWTF and be operational by September 1, 2020. The addition of the Triton UAS mission, to include personnel and their families, would not significantly affect current or future WWTF operations at NS Mayport. Personnel numbers at NS Mayport have decreased over the past 10 years but the existing system was designed to support a much higher capacity. Addition of about 400 people working at the installation (no one is anticipated to live on station) would not represent a capacity issue at the current WWTF. In summary, no significant impacts are anticipated to water resources under Alternative 2, NS Mayport.

Under Alternative 3 at WFF, groundwater would not be affected during construction and surface waters would be directed to recharge areas. Approximately 5 acres of impervious surfaces would be added to WFF. Localized increases in stormwater run-off could potentially occur; however, any possible increases would not exceed the current capacities of stormwater systems at WFF. Retention structures would be provided to collect stormwater from the newly developed area. These structures would be designed to discharge no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Construction practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. Stormwater Best Management Practices and Standard Operating Procedures are detailed in WFF's Integrated Contingency Plan. Additionally, a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development," would be used to minimize stormwater effects. These practices could include reducing impervious surfaces, using porous pavements, and installing cisterns. Therefore, insignificant impacts to surface waters and stormwaters would occur by implementing Alternative 3. Aircraft operations would not affect groundwater, and erosion and sedimentation control measures would preclude adverse impacts to surface and

stormwaters. Neither proposed construction activities nor operations would affect wetlands or floodplains under Alternative 3, WFF. In summary, no significant impacts are anticipated to water resources under Alternative 3, WFF.

ES.5.6 Cultural Resources

Under Alternative 1, NAS Key West, there are no National Register of Historic Places (NHRP)-listed or eligible archaeological sites or structures located in the area of potential effects (APE). Furthermore, no traditional cultural properties have been recognized within the APE. Therefore, implementing Alternative 1, NAS Key West, would result in no direct or indirect adverse impacts to listed or potentially eligible historic properties or to traditional cultural properties. On June 30, 2016, the Navy requested the concurrence of the Florida State Historic Preservation Office that Alternative 1 warrants a finding of "No Historic Properties Affected."

Under Alternative 2 at NS Mayport, there is one NRHP-listed property (the St. Johns Lighthouse) located adjacent to the APE at NS Mayport. A surface inspection of the project APE was conducted on December 17, 2015. Archaeologists observed evidence of significant disturbance on undeveloped portions of land throughout the APE and concluded that this was the product of original runway construction and ongoing runway/grounds maintenance over the past 70 years. Given observed site conditions and a review of historical U.S. Geological Survey maps, the Navy concluded that there is a low probability that intact archeological resources will be identified in the course of the Triton UAS project. No archaeological sites are identified in the APE. However, in the event that intact subsurface cultural resources are inadvertently discovered during construction or demolition activities, work would cease, the cultural resources would be evaluated for NRHP eligibility, and consultation would continue per 36 CFR parts 800.4 to 800.6. The NS Mayport Cultural Resources Manager would follow the procedures outlined in the station's Integrated Cultural Resources Management Plan. Based on these findings, the Navy has determined that there will be no direct effects to the St. Johns Lighthouse footprint or the viewshed of the historic property. On June 30, 2016, the Navy requested the concurrence of the Florida State Historic Preservation Office that Alternative 2 warrants a finding of "No Historic Properties Affected."

Under Alternative 3 at WFF, there are no NRHP-listed or eligible archaeological sites or structures located in the APE at WFF. Furthermore, no traditional cultural properties have been recognized within the APE. Therefore, implementing Alternative 3, WFF, would result in no direct or indirect adverse impacts to listed or potentially eligible historic properties, or to traditional cultural properties. Per letter dated July 14, 2016, the Navy initiated interagency coordination with the Virginia Department of Historic Resources. The Navy and NASA determined that the undertaking will have no effect on historic architectural or archeological resources, as the APE does not contain NRHP-listed or eligible properties. The Navy and NASA invited the Virginia Department of Historic Resources to concur with the effect determination for the undertaking. The Virginia Department of Historic Resources concurred with the no effect determination via email dated August 10, 2016.

ES.5.7 Socioeconomics

Population. Under the three action alternatives, there would be negligible changes to the population numbers and demographics. Construction would be short-term and draw from the existing labor pool, and therefore, would not cause significant changes to the existing population. In the long-term, the addition of approximately 900 people would increase the local population under Alternative 1 at NAS

Key West by about 3 and 8 percent in the Lower Keys and Key West Census County Division (CCD), respectively. Under Alternative 2 at NS Mayport, local population would increase by about 2 percent in the Jacksonville Beaches CCD and less than 1 percent in Duval County. For Alternative 3 at WFF, the local population would increase by about 3 percent in Accomack County and about 8-percent in Northampton County, both counties are in Virginia, and about 4-percent in Somerset County, Maryland.

Employment and Income. At the three alternative locations, short-term beneficial economic impacts and increased demand for goods and services through construction activities would result for up to 2 years. It is not anticipated that, given the market for similar goods and services, this increase in demand would result in a scarcity of such goods and services. In the long-term, there would be beneficial effects on the local economy due to an uptake in the local labor pool and an increase in demand for goods and services.

Housing, under Alternative 1, with a housing unit vacancy rate of approximately 34 percent in the Key West CCD and about 43 percent in the Lower Keys CCD, there is adequate, affordable rental opportunities available for all personnel to live off station. It is not anticipated that the additional demand for housing would lead to noticeable increases in housing costs. No significant impacts to housing are anticipated from implementing Alternative 1 at NAS Key West.

For Alternative 2, with a housing unit vacancy rate of more than 14 percent in both the Jacksonville Beaches CCD and Duval County, there is adequate, affordable units available for the majority of personnel to afford off-station housing. It is not anticipated that the additional demand for housing would lead to noticeable increases in housing costs. No significant impacts to housing are anticipated from implementing Alternative 2 at NS Mayport.

For Alternative 3, there is an average housing unit vacancy rate of approximately 28 percent across the three counties and there is adequate, affordable rental housing available for personnel to reside off the WFF. It is not anticipated that the additional demand for housing would lead to noticeable increases in housing costs. No significant impacts to housing are anticipated from implementing Alternative 3 at WFF.

ES.5.8 Transportation

During construction under Alternative 1, at NAS Key West, vehicles and equipment would use the commercial traffic entrance on Midway Avenue. The gate is about 1,500 feet from U.S. Route 1 and therefore would avoid congestion on U.S. Route 1 from construction equipment and workers. Once the home basing is completed, the estimated 400 personnel (assuming that everyone is commuting singly), traveling to and from the air station would not cause the level of service on U.S. Route 1 to deteriorate. The Main Gate is located on Saratoga Road and there is enough distance between U.S. Route 1 exit/entry ramps to avoid congestion along U.S. Route 1. During the peak morning and evening rush hours, however, there could be minor congestion. However, no significant impacts to transportation from implementing Alternative 1, NAS Key West, are anticipated.

Under Alternative 2, at NS Mayport, construction vehicles and equipment would use the Perimeter/Patrol Roads entrance (i.e., Gate 5). There are entry and merge lanes that would alleviate congestion on Highway A1A. Once the home basing is completed, the estimated 400 personnel (assuming that everyone is commuting singly), traveling to and from the station would not cause the level of service on Highway A1A to deteriorate. Minor congestion at the gate in the peak morning and

evening rush hours would be expected. However, no significant impacts are anticipated to transportation from implementing Alternative 2, NS Mayport.

Under Alternative 3, at WFF, construction vehicles would use the Main Gate entrance at Mill Dam Road, potentially causing temporary congestion. Once the construction activities are completed, the estimated 400 personnel (assuming that everyone is commuting singly), traveling to and from WFF would not cause the level of service on either Mill Dam or Atlantic Roads to deteriorate. Minor congestion at the gate in the peak morning and evening rush hours would be expected. However, no significant impacts are anticipated to transportation from implementing Alternative 3, WFF.

ES.5.9 Hazardous Materials and Wastes

Under any of the three action alternatives, all hazardous wastes generated resulting from construction, demolition, and renovation activities would be handled under the existing Resource, Conservation, and Recovery Act (RCRA)-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel.

For special hazards such as asbestos-containing materials and lead-based paint, these substances would be managed and disposed of in accordance with Toxic Substance and Control Act and Occupational Safety and Health Act regulations, applicable state and local regulations, and established Navy procedures.

Under Alternative 1, NAS Key West, no Defense Environmental Restoration Program sites would be directly impacted; however, there are two Solid Waste Management Units (SWMUs) adjacent to the proposed Triton UAS facilities. The first is a former open disposal area (SWMU 1) with a potential for petroleum, oil, and lubricant contamination; the site has been remediated and is routinely monitored. The second site, a former fire-fighting area (SWMU 3), has the potential for petroleum, oil, and lubricant contamination but has been remediated and is closed.

Under Alternative 2, NS Mayport, three Defense Environmental Restoration Program sites, SWMU 28 and 26, and Area of Concern (AOC) 58, would be affected. While these restoration program sites coincide with proposed renovation and/or construction, close coordination between the base's Environmental Restoration Program leadership, the U.S. Environmental Protection Agency, and Florida Department of Environmental Protection would occur to avoid adverse impacts.

For Alternative 3 at the WFF, the U.S. Army Corps of Engineers (USACE) submitted a draft Site Investigation report in the fall of 2015 of various Formerly Used Defense Sites at NASA's WFF Main Base. The USACE is currently in negotiations with NASA, the U.S. Environmental Protection Agency, and the Virginia Department of Environmental Quality on finalizing the Site Investigation report.

ES.5.10 Coastal Zone

The Navy and NASA have determined that implementing the Proposed Action at the two alternative locations in Florida is consistent, to the maximum extent practicable, with the enforceable policies of Florida and fully consistent with the Virginia State Coastal Management Programs. The Navy delivered Coastal Consistency Determinations for the two alternative locations in Florida to the Florida State Clearinghouse via a letter dated July 11, 2016 and invited concurrence from the State of Florida. The Navy delivered a Coastal Consistency Determination for the alternative location in Virginia to the Virginia Department of Environmental Quality via letter dated August 8, 2016, and invited concurrence from the Commonwealth of Virginia.

ES.6 Cumulative Effects

No significant direct or indirect cumulative impacts would be expected on any of the resources analyzed at the three alternative locations.

ES.7 Public Involvement

Alternative 1: Naval Air Station Key West, Florida

The Navy published a Notice of Availability (NOA) in *The Key West Citizen* on September 1, 2, and 3, 2016; in the twice weekly paper, *The Keynoter,* the NOA appeared September 1 and 3; and in the weekly paper, *The Keynoter,* on September 2, 2016. This commenced the 30-day public review period that ran from September 1 to October 1, 2016. Copies of the Draft EA were made available at two local libraries and the Draft EA was posted on the following website: *http://www.public.navy.mil/usff/environmental/Pages/NEPAprojects.aspx.* Additionally, letters were mailed to stakeholders and a press release was issued to announce the Draft EA availability and the onset of the public review period.

Alternative 2: Naval Station Mayport, Florida

The NOA was announced in the *Jacksonville Times-Union* on September 1, 2, and 3, 2016, which initiated the 30-day public review period that ran from September 1 to October 1, 2016. Copies of the Draft EA were made available at three local libraries and the Draft EA was posted on the following website: *http://www.public.navy.mil/usff/environmental/Pages/NEPAprojects.aspx*. Additionally, letters were mailed to stakeholders and a press release was issued to announce the Draft EA availability and the onset of the public review period.

Alternative 3: NASA Wallops Flight Facility, Virginia

The NOA was announced in the *Virginian Pilot* and *Daily Times* on September 1, 2, and 3, 2016; and in the weekly paper, the *Eastern Shore Post,* the NOA appeared on September 2, 2016. This commenced the 30-day public review period that ran from September 1 to October 1, 2016. Copies of the Draft EA were made available at three local libraries and the WFF Visitors Center, and the Draft EA was posted on the following website: *http://www.public.navy.mil/usff/environmental/Pages/NEPAprojects.aspx.* Additionally, letters were mailed to stakeholders and a press release was issued to announce the Draft EA availability and the onset of the public review period.

ES.8 Summary Comparison of Potential Impacts by Alternative

Table ES-1 provides a tabular summary of the potential impacts to the resources associated with each of the alternative actions analyzed.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*NAS Key West, Florida*	*NS Mayport, Florida*	*Wallops Flight Facility, Virginia*
Noise	The No Action Alternative would have no significant impacts to the noise environment.	Alternative 1: Construction noise would be short-term and would not affect areas outside of installation boundaries. A less than 1 dB DNL increase in noise levels due to Triton UAS operations would likely not be noticeable.	Alternative 2: Construction noise would be short-term and would not affect areas outside of installation boundaries. A less than 1 dB DNL increase in noise levels due to Triton UAS operations would likely not be noticeable.	Alternative 3: Construction noise would be short-term and would not affect areas outside of installation boundaries. A less than 1 dB DNL increase in noise levels due to Triton UAS operations would likely not be noticeable
Public Health and Safety	The No Action Alternative would not create any significant impacts.	Alternative 1: No measurable effects to aircraft mishaps. The 3.5 percent increase in aircraft operations would not necessitate changes to existing APZ boundaries. Implementation of existing procedures would minimize BASH.	Alternative 2: No measurable effects to aircraft mishaps. The 1.7 percent increase in aircraft operations would not necessitate additional APZ I and II boundaries. Implementation of existing procedures would minimize BASH.	Alternative 3: No measurable effects to aircraft mishaps. The 3.1 percent increase in aircraft operations would not necessitate additional APZ boundaries. Implementation of existing procedures would minimize BASH.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*NAS Key West, Florida*	*NS Mayport, Florida*	*Wallops Flight Facility, Virginia*
Air Quality	The No Action Alternative would have no significant impacts to air quality.	Alternative 1: Construction would introduce short-term increases in criteria pollutant emissions. However, these emissions would not change regional attainment status. Mobile source emissions generated by the 2.8 percent increase of personnel and Triton UAS operations would introduce negligible increases in criteria pollutant emissions. However, these long-term effects would not change the regional air quality attainment status. About 740 metric tons of GHG emissions would be introduced; however, this alone would not cause global warming that could lead to climate change.	Alternative 2: Construction would introduce short-term increases in criteria pollutant emissions. However, these emissions would not change its attainment status. Mobile source emissions generated by the 1.7 percent increase of personnel and Triton UAS operations would introduce negligible increases in criteria pollutant emissions. However, these long-term effects would not change the regional air quality attainment status. About 740 metric tons of GHG emissions would be introduced; however, this alone would not cause global warming that could lead to climate change.	Alternative 3: Construction would introduce short-term increases in criteria pollutant emissions. However, these emissions would not change its attainment status. Mobile source emissions generated by the approximate 2.7 percent increase of personnel and Triton UAS operations would introduce negligible increases in criteria pollutant emissions. However, these long-term effects would not change the regional air quality attainment status. About 740 metric tons of GHG emissions would be introduced; however, this alone would not cause global warming that could lead to climate change.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*NAS Key West, Florida*	*NS Mayport, Florida*	*Wallops Flight Facility, Virginia*
Biological Resources	The No Action Alternative would not create any significant impacts.	Alternative 1: Approximately 2 acres of maintained/landscaped area would be impacted. Construction noise may result in minor behavioral disturbance. However, no effects to feeding, sheltering, and reproduction are anticipated, and temporary alterations to behavior would return to normal once construction is complete. Once operational, Triton UAS operations would introduce 3.5 percent more flights, producing a less than 1-dB increase in the noise levels. This amount of change would not introduce significant impacts to wildlife. Pursuant to the ESA, federally listed species may be affected but are not likely to be adversely affected by this alternative. Pursuant to the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, no harm or incidental take of eagles or migratory birds is anticipated.	Alternative 2: About 10 acres of forested areas would be impacted. Construction noise may result in minor behavioral disturbance. However, no effects to feeding, sheltering, and reproduction are anticipated, and temporary alterations to behavior would return to normal once construction is complete. Once operational, Triton UAS aircraft operations would introduce 1.7 percent more flights, producing a less than 1-dB increase in the noise levels. This amount of change would not introduce significant impacts to wildlife. Pursuant to the ESA, federally listed species may be affected but are not likely to be adversely affected by this alternative. Pursuant to the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, no harm or incidental take of eagles or migratory birds is anticipated.	Alternative 3: Approximately 5 acres of maintained/landscaped vegetation would be impacted. Construction noise may result in minor behavioral disturbance. However, no effects to feeding, sheltering, and reproduction are anticipated, and temporary alterations to behavior would return to normal once construction is complete. Once operational, Triton UAS aircraft operations would introduce 3.1 percent more flights, producing a less than 1-dB increase in the noise levels. This amount of change would not introduce significant impacts to wildlife. Pursuant to the ESA, this alternative and its environmental consequences would have no effect on federally listed species. Pursuant to the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, no harm or incidental take of eagles or migratory birds is anticipated.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*NAS Key West, Florida*	*NS Mayport, Florida*	*Wallops Flight Facility, Virginia*
Water Resources	Under the No Action Alternative, no significant impacts to water resources.	Alternative 1: Groundwater would not be affected by construction; erosion and sedimentation control measures would ensure no significant impacts. About 5 acres of additional impervious surfaces would be introduced; however, retention structures would be designed to discharge stormwater no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Once home based no impacts would occur to groundwater or most surface waters from Triton UAS operations. Wetland habitat would be impacted by construction, a jurisdiction delineation would be conducted to determine the exact locations of wetlands in the project area, and to inform the permitting process should a permit be required. Construction would occur in the 100- and 500-year floodplains. No practicable alternative is available as the entire Air Station is located in the floodplains. No impacts to the floodplains once the UASs are operational.	Alternative 2: Groundwater would not be affected by construction; erosion and sedimentation control measures would ensure no adverse impacts to the lower St. Johns River. About 8 acres of additional impervious surfaces would be introduced; however, retention structures would be designed to discharge stormwater no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Once home based no impacts would occur to groundwater or surface waters from Triton UAS operations. Proposed construction or operations would not affect wetlands or floodplains.	Alternative 3: Groundwater would not be affected by construction; erosion and sedimentation control measures would ensure no significant impacts. About 5 acres of additional impervious surfaces would be introduced; however, retention structures would be designed to discharge stormwater no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Once home based no impacts would occur to groundwater or surface waters from Triton UAS operations. Proposed construction or operations would not affect wetlands or floodplains.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*NAS Key West, Florida*	*NS Mayport, Florida*	*Wallops Flight Facility, Virginia*
Cultural Resources	The No Action Alternative would not introduce significant impacts to cultural resources.	Alternative 1: No impacts to archaeological, architectural, or traditional cultural properties	Alternative 2: No impacts to archaeological or traditional cultural properties. The St. Johns Lighthouse (an NRHP-listed building) is about 580 feet from the proposed construction site; however, the Navy concluded that there would be no direct effects to the lighthouse footprint or the viewshed of the historic property.	Alternative 3: No impacts to archaeological, architectural, or traditional cultural properties.
Socioeconomics	The No Action Alternative would not create any significant impacts.	Alternative 1: The 2.8 percent increase in the population would not introduce adverse impacts. There would be short-term beneficial economic effects during construction and long-term beneficial impacts from additional employment incomes. Housing units (owner occupied and rental) are available for increases in personnel and their dependents in the greater Key West and Lower Keys area.	Alternative 2: The 1.7 percent increase in the population would not introduce adverse impacts. There would be short-term beneficial economic effects during construction and long-term beneficial impacts from additional employment incomes. Housing units (owner occupied and rental) are available for increases in personnel and their dependents in the greater Jacksonville Beaches CCD area.	Alternative 3: The 2.7 percent increase in the population would not introduce adverse impacts. There would be short-term beneficial economic effects during construction and long-term beneficial impacts from additional employment incomes. Housing units (owner occupied and rental) are available for increases in personnel and their dependents in and around Accomack County.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*NAS Key West, Florida*	*NS Mayport, Florida*	*Wallops Flight Facility, Virginia*
Transportation	The No Action Alternative would not create any significant impacts.	Alternative 1: Construction vehicles and equipment would use the commercial entrance on Midway Avenue, about 1,500 feet from its intersection with U.S. Highway Route 1. This distance from the highway would avoid congestion or traffic slow down on U.S. Highway Route 1 during construction. Personnel traveling to and from the air station would not cause the Level of Service (LOS) on U.S. Highway Route 1 or Saratoga Road to deteriorate; there is existing capacity for the roads to support an increase of commuting personnel. However, there may be congestion at the Main Gate during peak morning and evening rush hours.	Alternative 2: Construction, vehicles and equipment would use the commercial entrance. There are entry and merge lanes that would alleviate congestion on State Highway A1A. Personnel traveling to and from the station would not cause the LOS on State Highway A1A to deteriorate. However, minor congestion at Gate 5 during peak morning and evening rush hours would be expected.	Alternative 3: Construction, vehicles and equipment could cause temporary congestion on Mill Dam Road. Personnel traveling to and from the installation would not cause the LOS on either Mill Dam or Atlantic Roads to deteriorate. Minor congestion at the gate in the peak morning and evening rush hours would be expected.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*NAS Key West, Florida*	*NS Mayport, Florida*	*Wallops Flight Facility, Virginia*
Hazardous Materials and Wastes	The No Action Alternative would not introduce significant impacts to hazardous materials or waste, special hazards, or Defense Environmental Restoration Program sites.	Alternative 1: Construction debris would be categorized and disposed according to federal, state, and local requirements; therefore, no significant impacts are anticipated. Once the Triton UASs are operational, no new hazardous materials or waste would be introduced to cause significant impacts. NAS Key West's status as a large quantity hazardous waste generator would not change. Special hazards would be handled according to established NAS Key West procedures. No Defense Environmental Restoration Program sites would be affected.	Alternative 2: Construction debris would be categorized and disposed according to federal, state, and local requirements; therefore, no significant impacts are anticipated. Once the Triton UASs are operational, no new hazardous materials or waste would be introduced to cause significant impacts. NS Mayport's status as a large quantity hazardous waste generator would not change. Special hazards would be handled according to established NS Mayport procedures. Three Defense Environmental Restoration Program sites, Solid Waste Management Units 28 and 26, and Area of Concern 58, would be affected; however, close coordination between the installation's Environmental Restoration Program leadership, the U.S. Environmental Protection Agency, and the Florida Department of Environmental Protection would occur to avoid adverse impacts.	Alternative 3: Construction debris would be categorized and disposed according to federal, state, and local requirements; therefore, no significant impacts are anticipated. Once the Triton UASs are operational, no new hazardous materials or waste would be introduced to cause significant impacts. The WFFs status as a large quantity hazardous waste generator would not change. Special hazards would be handled according to established WFF procedures. The USACE submitted a draft Site Investigation report in the fall of 2015 of various Formerly Used Defense Sites at NASA's WFF Main Base. The USACE is currently still in negotiations with NASA, the U.S. Environmental Protection Agency, and the Virginia Department of Environmental Quality on finalizing the Site Investigation report.

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Environmental Assessment
East Coast Home Basing of MQ-4C Triton Unmanned Aircraft System
NAS Key West, Florida; NS Mayport, Florida;
and Wallops Flight Facility, Virginia

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Acronyms and Abbreviations

ABBREVIATIONS AND ACRONYMS

Acronym	Definition
ACM	asbestos-containing material
ADT	average daily traffic
AFB	Air Force Base
AFS	Air Force Station
AFTT	Atlantic Fleet Training and Testing
AGL	above ground level
AICUZ	Air Installations Compatible Use Zones
AOC	Area of Concern
APE	Area of Potential Effect
APZ	Accident Potential Zone
AQCR	Air Quality Control Region
ATC	Air Traffic Control
BAH	Basic Allowance for Housing
BAMS	Broad Area Maritime Surveillance
BASH	Bird/Animal Aircraft Strike Hazard
BLS	Bureau of Labor Statistics
CAA	Clean Air Act
CCD	Census County Division
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CNIC	Commander, Navy Installations Command
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CONUS	Continental United States
CWA	Clean Water Act
CVN	Nuclear-Powered Aircraft Carrier
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted sound level
DEP	Department of Environmental Protection
DEQ	Department of Environmental Quality
DERP	Defense Environmental Restoration Program
DNL	Day-Night Average Sound Level
DoD	United States Department of Defense
DOT	Department of Transportation
EA	Environmental Assessment
ECR	Environmental Compliance and Restoration

Acronym	Definition
EFH	essential fish habitat
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCLP	field carrier landing practice
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FNAI	Florida Natural Areas Inventory
FOB	Forward Operating Base
FONSI	Finding of No Significant Impact
FRS	Fleet Replacement Squadron
FY	fiscal year
GHG	greenhouse gas
GIS	Geographic Information System
Hz	hertz
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
ISR	intelligence, surveillance, and reconnaissance
KWIA	Key West International Airport
LBP	lead-based paint
LKMR	Lower Keys marsh rabbit
LOS	level of service
MBTA	Migratory Bird Treaty Act
MCB	Marine Corps Base
MMA	Multi-Mission Maritime Aircraft
MMPA	Marine Mammal Protection Act
MSL	mean sea level
MWR	Morale, Welfare, and Recreation
NAAQS	National Ambient Air Quality Standards
NACA	National Advisory Committee on Aeronautics
NAS	Naval Air Station
NASA	National Aeronautics and Space Administration
NATOPS	Naval Air Training and Operating Procedures Standardization
NAVAIR	Naval Air Systems Command
NAVFAC	Naval Facilities Engineering Command

Acronym	Definition
Navy	U.S. Department of the Navy
NBVC	Naval Base Ventura County
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPR	NASA Procedural Requirements
NRHP	National Register of Historic Places
NS	Naval Station
O_3	ozone
OCONUS	Outside the Continental United States
OEA	Overseas Environmental Assessment
OEIS	Overseas Environmental Impact Statement
OLF	Outlying Landing Field
OPNAVINST	Office of the Chief of Naval Operations Instruction
OSH	Office of Safety and Health
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
P.L.	Public Law
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
POL	petroleum, oil, and lubricants
POV	privately owned vehicle
RCRA	Resource, Conservation, and Recovery Act
ROI	region of influence
RV	Recreational Vehicle
SEL	Sound Exposure Level
SHPO	State Historic Preservation Office(r)
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasures
SSI	Special Security Information
SUA	Special Use Airspace
SWMU	Solid Waste Management Unit
SWPPP	Storm Water Pollution Prevention Plan
TFR	Temporary Flight Restriction
TMDL	Total Maximum Daily Load
TSCA	Toxic Substances Control Act
UAS	unmanned aircraft system
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VACAPES	Virginia Capes
VDCR	Virginia Department of Conservation and Recreation
VDOT	Virginia Department of Transportation
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WFF	Wallops Flight Facility
WWTF	waste water treatment facility

1 Purpose of and Need for the Proposed Action

1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The United States (U.S.) Navy (Navy), along with the National Aeronautics and Space Administration (NASA) proposes to provide facilities and functions to operate and maintain the MQ-4C Triton unmanned aircraft system (Triton UAS) on the East Coast. Under this Proposed Action, the Navy plans to establish a launch and recovery site for four home based Triton UAS and support a consolidated maintenance hub for up to four additional aircraft undergoing maintenance actions. The East Coast home base location would be a permanent duty station for up to 400 personnel, plus family members, and would support rotational deployments of personnel and aircraft outside the continental U.S. (OCONUS). Facility construction and renovations would begin in 2017 and associated deployable fleet UAS assets would begin operations in 2019, reaching a steady state of operations in the 2023 timeframe.

The Triton UAS is a multiple-sensor, unarmed, unmanned aircraft system that is approximately 48 feet long and has a wingspan of approximately 131 feet. The Triton UAS provides continuous maritime intelligence, surveillance, and reconnaissance (ISR) data collection and dissemination capability to the serviced Fleet Commander for up to 24 hours per day.

Figure 1-1
MQ-4C Triton Unmanned Aircraft System

The Triton UAS is a complement to the Navy's P-8A Multi-Mission Maritime Aircraft and uses the same tactical support centers as the P-8A aircraft. The tactical support centers support the command and control functions of both the P-8A and Triton UAS. Environmental analyses addressing the establishment of these tactical support centers at Naval Air Station (NAS) Jacksonville, Florida and NAS Whidbey Island, Washington were conducted in the Environmental Impact Statement (EIS) for the Introduction of the P-8A Multi-Mission Maritime Aircraft into the U.S. Navy Fleet (U.S. Navy, 2008). Since the Triton UAS is an unmanned, remotely controlled aircraft system, it is not necessary for the tactical support center and home base location for the Triton UAS to be collocated.

In order to meet mission requirements and provide broad geographic coverage, the Navy requires the establishment of two home basing locations for the MQ-4C Triton UAS in the continental United States (CONUS) and three locations OCONUS to provide persistent maritime ISR capabilities in five areas of responsibility. In accordance with Office of the Chief of Naval Operations Instruction (OPNAVINST) 5400.44A of 13 October 2011, the Secretary of the Navy is responsible for the home basing decision. Commander, U.S. Fleet Forces Command will prepare the associated Environmental Assessment (EA) and sign a Finding of No Significant Impact (FONSI), along with NASA, if appropriate, for each potential East Coast home base location. As further discussed in Section 1.2 and Chapter 2, three alternative locations are evaluated in this EA for the East Coast home base as a result of siting factors explained in Chapter 2, Proposed Action and Alternatives. The Navy has prepared this EA in accordance with National

Environmental Policy Act (NEPA), as implemented by the Council on Environmental Quality (CEQ) regulations, as well as Navy and NASA regulations for implementing NEPA.

1.2 Location

Three alternative MQ-4C Triton UAS East Coast home base sites are evaluated in this EA. Each are briefly described below and shown in Figure 1-2.

1.2.1 Naval Air Station Key West, Florida

NAS Key West is composed of approximately 6,500 acres of land distributed over several properties located in the Florida Keys, Monroe County, Florida. The approximate 4,700-acre Boca Chica Airfield is NAS Key West's primary site. The airfield is located on Boca Chica Key, approximately 5 miles east of the city of Key West, 156 miles southwest of Miami, and 90 air miles north of Cuba. Key West is the closest point in the U.S. to Cuba, South America, and the Caribbean Sea, making NAS Key West a significant military and homeland security asset, independent of its role as an aviation training venue.

NAS Key West was established at its present location on Boca Chica Key during World War II (1941 to 1945). Boca Chica Airfield originated as a municipal airport; however, it was leased to the Army in 1942 and three paved runways were built. In 1943, it was then transferred to the Navy (NAS Key West, 2014). Throughout the decades, the southernmost Naval Air Station in the continental U.S. has proven to be an ideal year-round training facility with rapid access to unencumbered oceanic training areas and overlying airspace. NAS Key West has been a home base to various squadrons and squadron detachments flying antisubmarine warfare, tactical electronic warfare, reconnaissance, attack, combat adversary, and strike fighter aircraft.

1.2.2 Naval Station Mayport, Florida

Naval Station (NS) Mayport is located 15 miles east of Jacksonville, Florida, on approximately 3,409 acres at the mouth of the St. Johns River in Duval County.

NS Mayport's operational composition is unique, with a busy harbor capable of accommodating 34 ships and an 8,000-feet runway capable of handling any aircraft in the U.S. Department of Defense (DoD) inventory. NS Mayport is host to more than 70 tenant commands, 18 naval ships, and 4 helicopter squadrons. NS Mayport is also the operational and training headquarters for the MH-60R Seahawk with a primary mission of anti-submarine warfare.

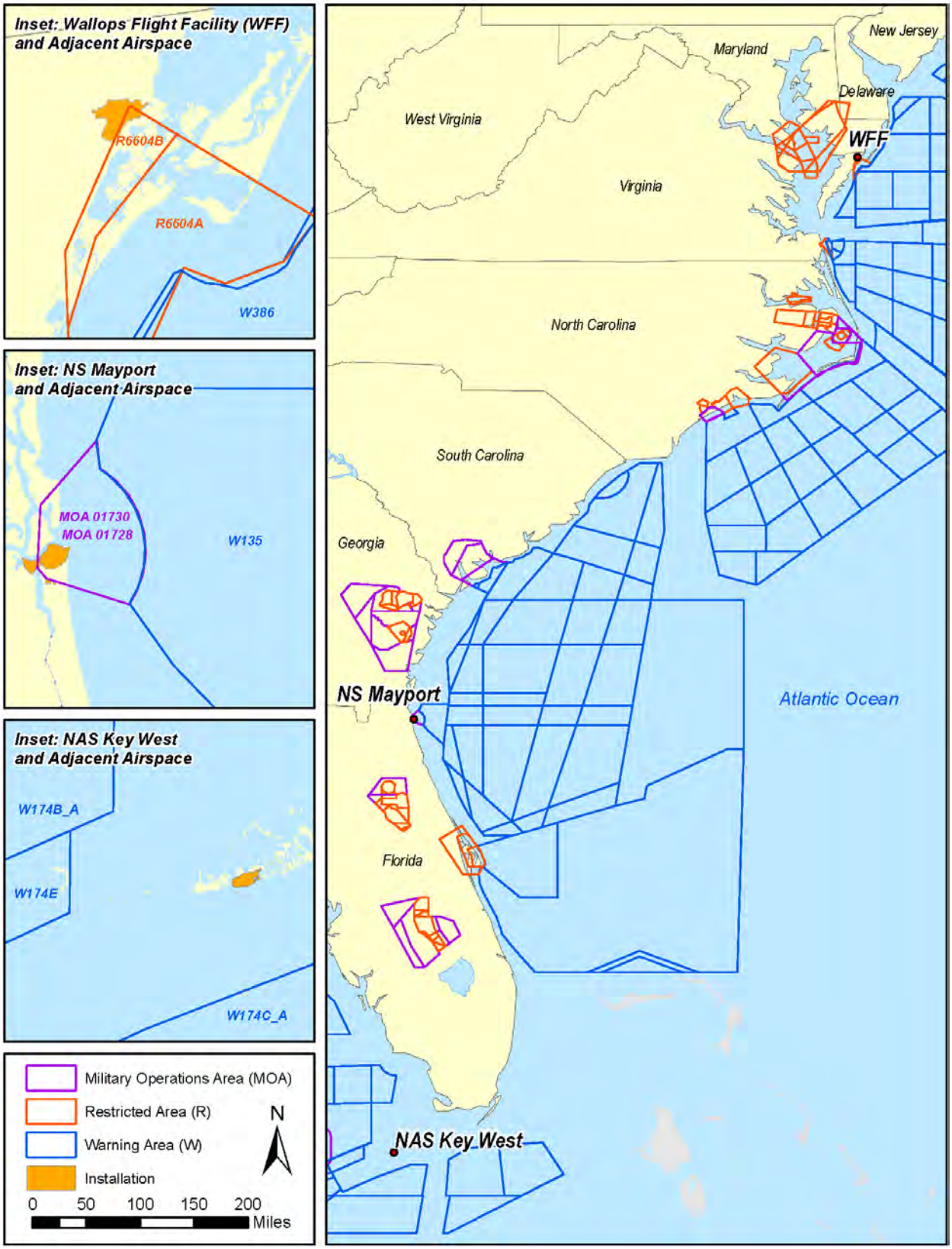

Figure 1-2 Triton Unmanned Aircraft System East Coast Home Basing Project Locations

1.2.3 National Aeronautics and Space Administration, Wallops Flight Facility, Virginia

Wallops Flight Facility (WFF) is a NASA Goddard Space Flight Center field installation located in Accomack County on the eastern shore of Virginia. The facility consists of three distinct landmasses—the Main Base, Wallops Mainland, and Wallops Island—totaling nearly 6,500 acres. It is the oldest active launch range in the CONUS and the only range completely under NASA management. For over 65 years, WFF has flown thousands of research vehicles seeking information related to the capabilities of airplanes, rockets, and spacecraft; and to increase the knowledge of the earth's upper atmosphere and the near space environment. The flight programs and projects currently supported by WFF include sounding rockets, scientific balloons, manned and unmanned experimental aircraft, orbital tracking, next-generation launch vehicle development, expendable launch vehicles, and small- and mid-size orbital spacecraft. WFF also collaborates with the U.S. Navy on aircraft missions and training as well as supporting Navy detachments and Navy tenants. To meet the safety and technical requirements of its various missions, many of WFF's primary launch support facilities reside on Wallops Island, which is located directly on the Atlantic Ocean. Aircraft operations occur at the airfield, which is located on the Main Base, about 6 miles north of the launch facilities.

In keeping with the principles, goals, and guidelines of the 2010 National Space Policy, WFF not only fulfills its own mission, but also provides unique services to NASA, commercial customers, defense agencies, and academia. The WFF supports aeronautical research, science technology, and education by providing other NASA centers and government agencies access to resources such as Special Use Airspace (e.g., restricted airspace), research runways, and launch pads. Additionally, WFF regularly enables a wide array of U.S. DoD research and development and training missions, including target and missile launches, and aircraft development.

1.3 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to locate an East Coast home base for the Triton UAS in order to enhance maritime ISR capabilities as part of the Navy's Maritime Patrol and Reconnaissance Force in the Atlantic Fleet's area of operations. The Proposed Action is needed to provide continuous maritime ISR capabilities in support of national defense objectives and policies. The program of record for the Triton UAS requires the establishment of two locations in the CONUS and three locations OCONUS to provide persistent maritime ISR capabilities. The selected West Coast location is Naval Base Ventura County Point Mugu, California, which was analyzed in a 2013 EA. Its selection as the West Coast location was informed by a FONSI signed on April 22, 2013.

1.4 Key Documents

Key documents are sources of information referenced in this EA. Documents are considered key because they deal with similar actions, analyses, or impacts that may apply to this Proposed Action. CEQ guidance encourages incorporating documents by reference. These documents are related documents that provide additional information the reader may find useful.

- **Final Environmental Impact Statement for Naval Air Station Key West Airfield Operations, Florida (2013).** In 2013, the Navy prepared an EIS that analyzed the potential effects associated with the supporting and conducting aircraft training operations and capabilities at NAS Key West by maintaining current/baseline training operations, supporting airfield operations by new types of aircraft, and modifying airfield operations as necessary in support of the Fleet Response Training Plan. On October 31, 2013, a Record of Decision was signed (U.S. Navy, 2013a).

- **Environmental Assessment/Overseas Environmental Assessment for the Navy MQ-4C Triton (Broad Area Maritime Surveillance [BAMS]) UAS Developmental Test Program (2012).** In 2012, the Navy prepared an EA/Overseas EA (OEA) that analyzed the potential effects associated with conducting the Navy's MQ-4C Triton (BAMS) UAS Developmental Test Program at NBVC Point Mugu, California. On March 13, 2013, a FONSI was signed (U.S. Navy, 2013b). The Developmental Test Program was to be conducted over a 3-year period beginning in fiscal year (FY) 2013 at a number of contractor and DoD facilities and ranges. The Developmental Test Program evaluated the operational capabilities of the Triton UAS in a variety of mission scenarios. The EA/OEA evaluated two alternatives for staging the Developmental Test Program: (1) NBVC Point Mugu, with portions of the testing requirements occurring at the Point Mugu Sea Range, California, and Northrop Grumman Corporation facility in Palmdale, California; and (2) NAS Patuxent River, Maryland, with secondary locations at the Northrop Grumman Corporation facility in Palmdale and NBVC Point Mugu. The Navy identified the second alternative as the preferred alternative. The action analyzed in the EA/OEA for the Navy's Triton BAMS UAS Developmental Test Program, including any associated flight operations, is separate and independent from this Proposed Action, including Triton UAS flight operations, addressed in this EA. A representative emergency divert location for NAS Patuxent River/Virginia Capes Complex (VACAPES) would be NASA WFF, Virginia.
- **Final Environmental Assessment for the West Coast Home Basing of the MQ-4C Triton Unmanned Aircraft System at Naval Base Ventura County Point Mugu, California (2013)**. In 2013, the Navy prepared an EA that analyzed the Navy's proposal to establish facilities and functions to support the West Coast home basing and maintaining of the MQ-4C Triton UAS, which was formerly known as the BAMS UAS, at NBVC Point Mugu, California. On April 22, 2013, a FONSI was signed (U.S. Navy, 2013c). Under the Proposed Action, the Navy would home base four Triton UAS aircraft; establish a maintenance hub for the Triton UAS, supporting up to four additional Triton UAS undergoing maintenance actions at any one time; conduct an average of five Triton UAS flight operations (i.e., takeoffs or landings) per day (1,825 annually); construct, demolish, and renovate facilities and infrastructure at NBVC Point Mugu; and station up to 700 personnel, plus their family members, while supporting rotational deployments to and from OCONUS.
- **Final Environmental Assessment E-2/C-2 Field Carrier Landing Practice Operations at Emporia-Greensville Regional Airport, Greensville County, Virginia, and National Aeronautics and Space Administration Wallops Flight Facility, Accomack County, Virginia (2013)**. In 2013, the Navy analyzed the proposed use of the facilities at either Emporia-Greensville Regional Airport (Emporia-Greensville) or at the NASA Goddard Space Flight Center's WFF until the Navy addresses local field carrier landing practice (FCLP) capacity shortfalls on a more permanent basis. The proposed action supported FCLP operations for E-2/C-2 squadrons operating from NS Norfolk Chambers Field. The EA analyzed the environmental consequences associated with both the proposed FCLP operations and minor modifications to airfield facilities to support the FCLP operations. The Navy was the lead agency for this proposed action, and the Federal Aviation Administration and NASA served as cooperating agencies. The EA evaluated two action alternatives for conducting E-2/C-2 FCLP operations, as well as a no action alternative. The two action alternatives included up to 45,000 annual operations at Emporia-Greensville (Alternative 1) and up to 45,000 annual operations at WFF (Alternative 2). Under the no action alternative, the Navy would continue using Naval Auxiliary Landing Field Fentress as the primary local airfield for E-2/C-2 FCLP training requirements. On January 15, 2013, a FONSI was signed (U.S. Navy, 2013d). The Navy found that the proposed action would not result in significant

adverse direct, indirect, or cumulative environmental impacts at Emporia-Greensville or NASA WFF Main Base.

- **Environmental Assessment for the Home Basing of the MH-60R/S on the East Coast of the United States (2002)**. In 2002, the Navy evaluated the home basing of 102 MH-60S and 105 MH-60R helicopters on the East Coast of the U.S. The East Coast locations under consideration were NS Norfolk, Virginia and the Jacksonville Fleet Concentration Area, Florida, which includes NS Mayport and NAS Jacksonville. Four alternatives were considered for siting the MH-60R and MH-60S helicopters. The preferred alternative was Alternative 1, which would home base all or most of the 102 MH-60S aircraft, associated personnel, and infrastructure at NS Norfolk; all or most of the 105 MH-60R aircraft, associated personnel, and infrastructure would be home based at the Jacksonville Fleet Concentration Area. On May 17, 2002, a FONSI was signed (U.S. Navy, 2002). No significant, adverse short-term or long-term impacts would occur at any of the installations from implementing the proposed action.
- **Environmental Impact Statement for the Introduction of the P-8A Multi-Mission Maritime Aircraft into the U.S. Navy Fleet (2008)**. In 2008, the Navy evaluated the introduction of the P-8A Multi-Mission Maritime Aircraft (MMA) in the U.S. Navy Fleet. In its Record of Decision signed on December 23, 2008, the Navy determined that its preferred alternative (Alternative 5) best met the needs of the Navy while minimizing potential environmental impacts. Alternative 5 included home basing five fleet squadrons with a fleet replacement squadron at NAS Jacksonville, four fleet squadrons at NAS Whidbey Island, and three fleet squadrons at Marine Corps Base (MCB) Hawaii Kaneohe Bay, with periodic squadron detachment operations at NAS North Island in San Diego, California (U.S. Navy, 2008).

  As noted in the Final EIS for the P-8A MMA, the Triton UAS aircraft can be home based at locations that are separate from the Tactical Support Center. The Triton UAS is controlled by satellite using a control station located in a building connected to the base communications system. Because of the similarity of mission, Triton UAS would be controlled from within the MMA Tactical Support Center, which is co-located with the P-8A MMA home basing sites. Thus, the facilities necessary for the Triton UAS control station were considered within the Final EIS for the P-8A MMA. Potential environmental impacts associated with Triton UAS were to be considered separately upon fielding the Triton UAS aircraft and development of a basing strategy. As noted, home base locations for Triton UAS aircraft and the P-8A MMA are not necessarily linked. However, the potential environmental impacts of the Triton UAS mission control station located within the Tactical Support Center were considered in the Final EIS for the P-8A MMA because P-8A's personnel augment the Triton UAS command and control functions.
- **Final Supplemental Environmental Impact Statement for the Introduction of the P-8A Multi-Mission Maritime Aircraft into the U.S. Navy Fleet (2014).** In 2014, the Navy re-evaluated the introduction of the P-8A MMA to the Navy Fleet via a Supplemental EIS (SEIS) given the availability of new information. The SEIS considered home basing P-8A fleet squadrons and the Fleet Replacement Squadron at two locations instead of three in order to meet current Navy requirements to maximize the efficiency of support facilities and simulation devices, and optimize the number of personnel required (U.S. Navy, 2014a). A Record of Decision was signed on June 3, 2014, and the Navy determined that Alternative 1 would best meet the Navy's needs while minimizing environmental impacts to the greatest extent possible. Alternative 1 considered the environmental effects of home basing six fleet P-8A squadrons and the fleet replacement squadron at NAS Jacksonville, Florida and six fleet squadrons at NAS Whidbey

Island, Washington. Alternative 1 also considered a permanent, rotating squadron detachment at MCB Hawaii Kaneohe Bay and periodic squadron detachments at Naval Base Coronado, California. The conclusions made in the 2008 EIS regarding the Triton UAS mission control complex were unaffected. The SEIS did note that constructing the Triton UAS Mission Control Complex would demolish an existing building and surface parking area. In its place a two-story, approximately 34,000-square foot building would be built.

- **Final Environmental Impact Statement for the Restoration of Clear Zones and Stormwater Drainage Systems at Boca Chica Field, Naval Air Station Key West, Florida (2007).** In 2007, the Navy analyzed the restoration of clear zones and stormwater drainage systems on Boca Chica Field to bring the airfield into compliance with Navy and Federal Aviation Administration (FAA) safety regulations. The EIS considered a phased implementation of the proposed action, which took into account maintenance of airfield resources to allow for airfield safety while meeting natural resources management goals, including procedures implemented to preserve wetland habitat (including mangroves) and habitat for the federally protected Lower Keys marsh rabbit.
- **Environmental Resources Document, National Aeronautics and Space Administration, Goddard Space Flight Center, Wallops Flight Facility (2016).** An Environmental Resources Document is specific to NASA and not required by the NEPA statute. The document serves as a succinct baseline description of all environmental aspects of the operations of WFF. The Environmental Resources Document was used to assist in the development of the environmental baseline for NASA WFF in this EA.

1.5 The Environmental Review Process

1.5.1 National Environmental Policy Act

As a federal statute, NEPA (42 U.S.C. sections 4321–4370h) requires the identification and analysis of potential environmental impacts associated with proposed major federal actions before those actions are taken. NEPA established the CEQ, which was charged with the development of implementing regulations and ensuring federal agency compliance with NEPA. The process for implementing NEPA is codified in Title 40 of the Code of Federal Regulations (CFR), parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (CEQ regulations). According to CEQ regulations, the requirements of NEPA must be integrated "with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively" (40 CFR section 1500.2). The NEPA process does not replace procedural or substantive requirements of other environmental statutes and regulations; it addresses them collectively in the form of an EA or an EIS, which enables the decision maker to have a comprehensive view of key environmental issues and requirements associated with a proposed action.

An EIS is prepared for federal actions that might significantly affect the quality of the natural or human environment. An EA is a concise document that provides sufficient analysis for determining whether the potential environmental impacts of a proposed action are significant, requiring the preparation of an EIS, or not significant, resulting in the preparation of a FONSI.

The Navy implements NEPA through *Procedures for Implementing the National Environmental Policy Act* (32 CFR part 775). Additional guidance is found in OPNAVINST 5090.6A, *Environmental Planning for Department of the Navy Actions*, and Office of the Chief of Naval Operations (OPNAV) M-5090.1, *Environmental Readiness Program Manual*. The National Aeronautics and Space Administration implements NEPA through NASA *Procedural Requirements (NPR) for Managing NEPA*

(NPR 8580.1). The intent of this EA is to assess the potential environmental impacts from the East Coast home basing and maintaining of the Triton UAS at one of three alternate locations: NAS Key West, Florida; NS Mayport, Florida; and NASA WFF, Virginia.

1.5.2 Scope of Analysis

NEPA directs agencies to focus an EA on potentially significant resources and issues affected by a proposed action or alternative. It also provides that a NEPA document should consider, but not analyze in detail, those areas or resources not potentially affected by the proposal. Therefore, a NEPA document should not be encyclopedic; rather, it should be succinct and to the point. Both description and analysis in an EA should provide sufficient detail and depth to ensure that the agency (e.g., the U.S. Navy and NASA) took a critical look at all resources potentially impacted by an action. NEPA also requires a comparative analysis that allows decision makers and the public to differentiate among the alternatives.

The primary focus of this EA is analysis of impacts on resources from the establishment of facilities and functions (i.e., construction and demolition activities) to support home basing of the Triton UAS and the subsequent activities required to maintain and operate these aircraft on the East Coast.

As one of the alternatives considered in this EA is to site the Triton UAS at a NASA installation, NASA served as a cooperating agency in the preparation of this EA. Under NEPA, a cooperating agency is another federal, state, local, or tribal government agency having jurisdiction by law and/or special expertise regarding the proposed action or its potential environmental effects. As the federal landowner at WFF, NASA possesses both jurisdiction by law as well as special expertise pertaining to the environmental resources within and adjacent to NASA WFF. Moreover, as a federal agency, NASA has its own NEPA policies and procedures (14 CFR part 1216.3) with which it must comply. As such, this EA was prepared to satisfy both the Navy and NASA's NEPA obligations.

1.5.3 Environmental Resources

All potentially relevant environmental resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, 32 CFR part 775, and 14 CFR part 1216.3 requirements, the discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact. Table 1-1 presents the potential resources that could be analyzed in this EA and whether elements of the Proposed Action would have the potential to affect these resources. The elements include construction and demolition, as well as aircraft maintenance and operations. This evaluation identified nine resources that are carried forward for further analysis.

Table 1-1 Resources Analyzed to Determine Need for Further Evaluation

Categories/Resources	*Elements of Proposed Action and Anticipated Impact*	
	Construction and Demolition	*Aircraft Maintenance and Operations*
Noise	Minor	Minor
Air Quality	Minor	Minor
Public Health and Safety	Minor	Minor
Biological Resources		
Vegetation[1]	Minor	None
Wildlife	Minor	Minor
Special Status Species (including federally protected species, bald and golden eagles, and migratory birds)	Minor	Minor
Water Resources		
Groundwater	Minor	None
Surface Water	Minor	None
Wetlands	Minor	None
Floodplains[1]	Minor	None
Cultural Resources[1]	Minor	None
Socioeconomics	Minor	Minor
Transportation	Minor	Minor
Hazardous Materials and Wastes	Minor	None
Airfield and Airspace Management	None	None
Land Use	None	None
Infrastructure and Utilities[1]	Minor	Minor
Recreation	None	None
Community/Emergency Services[1]	None	Minor
Environmental Justice	None	None
Visual/Aesthetic Resources	None	None
Soils and Topography	None	None

Note: [1]Differs depending on the alternative and further resource consideration is addressed in each chapter associated with an alternative.

1.5.4 Resources Not Carried Forward for Detailed Analysis

Depending on the action alternative, some environmental resources were omitted from further detailed analysis in this EA because there would be negligible to no impacts to these resources from implementing the Proposed Action. The resources omitted from further detailed analysis are presented at the beginning of each action alternative's impact analysis chapter (Chapters 4, 6, and 8).

1.6 Relevant Laws and Regulations

The Navy has prepared this EA based upon federal and state laws, statutes, regulations, and policies that are pertinent to the implementation of the Proposed Action, including the following:

- NEPA (42 U.S.C. sections 4321-4370h), which requires an environmental analysis for major federal actions that have the potential to significantly impact the quality of the human environment
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR parts 1500-1508)
- Navy regulations for implementing NEPA (32 CFR part 775)
- NASA regulations for implementing NEPA (14 CFR part 1216.3)
- Clean Air Act (CAA) (42 U.S.C. section 7401 et seq.)

- Clean Water Act (CWA) (33 U.S.C. section 1251 et seq.)
- Coastal Zone Management Act (CZMA) (16 U.S.C. section 1451 et seq.)
- National Historic Preservation Act (NHPA) (54 U.S.C. section 306108 et seq.)
- Endangered Species Act (ESA) (16 U.S.C. section 1531 et seq.)
- Marine Mammal Protection Act (MMPA) (16 U.S.C. section 1361 et seq.)
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. section 703-712)
- Bald and Golden Eagle Protection Act (16 U.S.C. section 668-668d)
- Executive Order (EO) 11988, Floodplain Management
- EO 13690, Floodplain Risk Management Standards
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks
- EO 13175, Consultation and Coordination with Indian Tribal Governments
- EO 13693, Planning for Federal Sustainability in the Next Decade
- EO 13653, Preparing the United States for the Impacts of Climate Change

A description of the Proposed Action's consistency with these laws, policies and regulations, as well as the names of regulatory agencies responsible for their implementation, is presented in Chapter 10 (Table 10-1).

1.7 Public Participation

According to CEQ regulations (40 CFR section 1506.6), agencies are directed to make diligent efforts to involve the public in preparing and implementing their NEPA procedures. Through the public involvement process, the Navy coordinates with relevant federal, state, and local agencies and notifies them and the public of the Proposed Action. Input from public responses is incorporated into the analysis of potential environmental impacts, as appropriate. Materials relating to interagency coordination and public involvement are included, as they become available, in Appendix A.

To announce the availability of the Draft EA for public review, a Notice of Availability (NOA) for this Draft EA was published in the following newspapers:

- Boca Chica Airfield – Lower Keys
  - The Key West Citizen
  - The Keynoter
  - The Southernmost Flyer
- Mayport – Jacksonville
  - Jacksonville Times-Union
- Wallops Island – Eastern Shore
  - Virginian Pilot (Virginia)
  - Eastern Shore Post (includes the Chincoteague Beacon and Eastern Shore News)
  - Daily Times (Maryland)

The published NOA solicited comments on the Draft EA and is intended to involve the local community in the decision making process. The 30-day public review period started on September 1, 2016, and ends on October 1, 2016. Copies of the Draft EA were available for review at the following local libraries:

- Key West
  - Monroe County Public Library, 700 Fleming Street, Key West, Florida 33040
  - Florida Keys Community College Library, 5901 College Road, Key West, Florida 33040
- Mayport – Jacksonville
  - Beaches Library, 600 3rd Street, Neptune Beach, Florida 32266
  - Main Library, 303 N. Laura Street, Jacksonville, Florida 32202
  - Public Library, 25 N. 4th Street, Fernandina Beach, Florida 32034
- Wallops Island – Eastern Shore
  - NASA Wallops Flight Facility Visitor's Center, Building J20, VA-175, Wallops Island, Virginia 23337
  - Chincoteague Island Library, 4077 Main Street, Chincoteague Island, Virginia 23336
  - Pocomoke Public Library, 301 Market Street, Pocomoke City, Maryland 21851
  - Eastern Shore Public Library, 23610 Front Street, Accomac, Virginia 23301

The Draft EA was posted on the Commander, U.S. Fleet Forces Command Web site: http://www.public.navy.mil/usff/environmental/Pages/NEPAprojects.aspx. Comments received from the public and federal, state, and local agencies will be considered in the Final EA. If the decision is made that an EA is sufficient for the Proposed Action, a final FONSI will be prepared and signed. A Final EA and FONSI NOA will be published in the same newspapers as listed above.

1.8 Agency Participation and Intergovernmental Coordination

The Navy has coordinated with the U.S. Fish and Wildlife Service (USFWS), and pursuant to the ESA found that the proposed action at NAS Key West and NS Mayport may affect, but is not likely to adversely affect, federally listed species. No effect to federally listed species is expected at WFF. Pursuant to the MBTA and Bald and Golden Eagle Protection Act, no harm or incidental takes of migratory birds or eagles, respectively is anticipated at any of the three proposed alternative locations in Florida and Virginia (see Appendix B for associated correspondence). Pursuant to the Endangered Species Act (ESA), Alternative 1 may affect, but is not likely to adversely affect, federally threatened and endangered species potentially occurring in the project area. Alternative 1 would have no effect on critical habitat as none is located in the project area. The Navy delivered a Biological Assessment of potential impacts under Alternative 1 to the USFWS South Florida Ecological Services Office via letter dated June 2, 2016 for consultation in accordance with the ESA. For Alternative 2, the Navy delivered a Biological Assessment to the USFWS North Florida Ecological Services Office, via a letter dated June 10, 2016 for consultation in accordance with the ESA. On July 14, 2016, the U.S. Fish and Wildlife concurred with the Navy finding of not likely to adversely affect resources protected by the ESA on NS Mayport. Under Alternative 3, there would be no effects to federally listed species.

The Navy has also coordinated with the Florida and Virginia State Historic Preservation Officers (SHPO) for potential impacts to listed or potentially eligible properties at the three alternative locations. No listed or potentially eligible properties are found within the area of potential effects (APE) at NAS Key West or WFF. However, the St. Johns Lighthouse (a listed building under the NHPA) is found within the APE at NS Mayport. Based on an evaluation of the site, the Navy determined that there would be no direct effects to the lighthouse footprint or the viewshed of the historic property. Concurrence with these findings was requested of the SHPOs. On June 30, 2016, the Navy requested the concurrence of the Florida State Historic Preservation Office that Alternatives 1 and 2 warrant a finding of "No Historic Properties Affected." Per a letter dated July 14, 2016, the Navy initiated interagency coordination with the Virginia Department of Historic Resources. The Navy and NASA determined that the undertaking will

have no effect on historic architectural or archeological resources, as the APE does not contain NRHP-listed or eligible properties. The Navy and NASA invited the Virginia Department of Historic Resources to concur with the effect determination for the undertaking. The Virginia Department of Historic Resources concurred with the effect determination via email dated August 10, 2016. Appendix B provides copies of this correspondence.

While traditional cultural properties have not been recognized at any of the three alternative locations, on August 1, 2016, the Navy notified the Seminole Tribe of Florida about the Proposed Action and Alternative 1. The Miccosukee Tribe of Indians, the Seminole Nation of Oklahoma, and the Seminole Tribe of Florida were also notified at the same time of Alternative 2. Pursuant to NASA's Programmatic Agreement, the Navy and NASA sent copies of the package sent to the Virginia Department of Historic Resources to the Pocomoke and Catawba Indian Nations apprising them of the Proposed Action and Alternative 3.

The Navy and NASA also determined that implementing the Proposed Action at the two alternative locations in Florida is consistent, to the maximum extent practicable, with the enforceable policies of the Florida Coastal Management Program and fully consistent with the Virginia Coastal Zone Management Programs. The Navy delivered Coastal Consistency Determinations for the two alternative locations in Florida to the Florida State Clearinghouse via a letter dated July 11, 2016 and invited concurrence from the State of Florida. The Navy delivered a Coastal Consistency Determination for the alternative location in Virginia to the Virginia Department of Environmental Quality via letter dated August 8, 2016, and invited concurrence from the Commonwealth of Virginia.

2 Proposed Action and Alternatives

2 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action (Section 2.1), factors used to develop the range of alternatives (Section 2.2), alternatives carried forward for analysis (Section 2.3), and alternatives considered but not carried forward for further analysis (Section 2.4).

2.1 Proposed Action

The Proposed Action is to provide facilities and functions to operate and maintain the MQ-4C Triton UAS on the east coast. Under this Proposed Action, the Navy plans to establish a launch and recovery site for four home based MQ-4C Triton Unmanned Aircraft System (Triton UAS) and support a consolidated maintenance hub for up to four additional aircraft undergoing maintenance actions. The east coast home base location would be a permanent duty station for up to 400 personnel, plus family members, and would support rotational deployments of personnel and aircraft outside the continental United States (OCONUS).

Specifically, the Proposed Action would home base four Triton UAS; establish a maintenance hub for the Triton UAS, supporting up to four additional Triton UAS undergoing maintenance actions at any one time; conduct an average of five Triton UAS flight operations (i.e., takeoffs or landings) per day (1,825 annually); construct, demolish, and/or renovate facilities and infrastructure at the home basing location; and station up to 400 personnel, plus their family members, while supporting rotational deployments to and from locations outside the United States (U.S.). It is assumed that a maximum of eight Triton UAS would be at the home basing location at any given time: four that are assigned for operational missions and four that have been transferred to the home base from another location to receive maintenance. Construction, demolition, and/or renovation activities would take place over a 2-year period, from Fiscal Year (FY) 2017 to FY 2019, with steady state operations beginning in the 2023 timeframe. The additional 400 personnel and their family members would gradually relocate to the home basing location and the surrounding area in phases, from FY 2019 to FY 2023. Details of the Proposed Action are provided in the following sections.

2.1.1 Flight Operations and Airspace

Under the Proposed Action, an average of five Triton UAS flight operations (take-offs or landings) would be conducted per day at the home base. The Proposed Action would take into consideration the existing flight operations at the home base and the proposed increase in flight operations due to proposed Triton UAS flight operations. The Triton UAS would conduct straight-in approaches and straight-out departures and no closed-pattern operations would be conducted. Ideally, the Triton UAS would primarily depart and arrive over the ocean. The proposed operational flight profile for the Triton UAS takes it to a high cruise altitude—up to approximately 60,000 feet above mean sea level (MSL). Triton UAS flight operations would be conducted in existing controlled airspace at the home base airfield. The Navy would obtain the appropriate authorizations from the FAA before Triton UAS flight operations associated with the Proposed Action are conducted. Triton UAS operations from the home base airfield would occur within Restricted, Warning, or Prohibited airspace. This is required for compliance with Federal Aviation Administration (FAA) Order 7610.4T, Special Operations. Restricted areas are airspace units that are established where the existence of unusual, often invisible, hazards to aircraft exist, e.g., artillery firing or aerial gunnery. Entering restricted areas without authorization from the using or controlling agency may be extremely hazardous to non-participating aircraft. Warning areas are airspace units, extending from the state waters boundary seaward, which contain activities that may be

hazardous to non-participating aircraft. Prohibited areas contain airspace established for security or other reasons associated with national welfare (e.g., airspace over the National Mall where the White House and Congressional buildings are located).

2.1.2 Airfield Runway and Taxiway

The Triton UAS has certain minimum airfield requirements for both the runway and taxiway. The runway must be at least 8,000 feet long and 150 feet wide. A taxiway would be required to connect the hangar and apron to the runway. The taxiway must be of sufficient dimensions to ensure adequate lateral wing clearance. The minimum taxiway width for the Triton UAS is 75 feet. To accommodate the full wingspan of the plane, vertical obstructions along each side of the taxiway (e.g., taxiway lights, signs, and airfield markings) must not exceed 1.6 feet in height.

2.1.3 Triton Unmanned Aircraft System Control Facility

A local Triton UAS control facility would be required to provide control of the Triton UAS departing and returning from the field. The control facility is a secure building that houses the controls for Triton UAS takeoffs and landings.

2.1.4 Hangars and Pavements

The Triton UAS airframes require protection from the elements (e.g., hail, rain, wind) when not in use. It is assumed that a maximum of eight Triton UAS would be at the East Coast home base at any given time: four that are permanently assigned for operational missions and four that have been transferred to the facility from another location to receive maintenance. Therefore, maintenance hangar(s) would be required to house and maintain eight Triton UAS at the proposed East Coast home base. Under the Proposed Action, the Navy evaluated the construction of new hangars to accommodate the Triton UAS. Considerations in hangar accommodations included maintenance space, administrative space, operations space, and storage space. Furthermore, adequate personnel parking and an aircraft parking apron must be available.

2.1.5 Demolition and Reconstruction Activities

The Navy assessed the existing facilities for their capability to provide the necessary clearance and space to accommodate the Triton UAS. New construction, existing facility renovation, and demolition were considered depending on the action alternative.

2.1.6 Power Check Pad

A power check pad of at least 19,260 square feet in size would be required to support the Triton UAS. A power check pad is a paved area (rectangular, square, or circular), with an anchor block in the center. It is used to perform full-power engine diagnostic testing while the aircraft is held stationary.

2.1.7 Aircraft Wash Rack

An aircraft wash rack would be required to support the Triton UAS. The aircraft wash rack would contain the rinse water runoff from the Triton UAS. The Navy assessed the existing aircraft wash rack(s) at each proposed home base location and determined that in most cases new wash rack construction would be needed.

2.1.8 Battery Storage Facility

The Triton UAS requires lithium ion batteries to operate. A battery storage facility would be required to store the batteries when they are not in use.

2.1.9 Other Storage/Supply

A storage and supply facility would be required to support the Triton UAS, a facility of approximately 6,000 square feet was determined to meet storage needs. Triton UAS require a common kerosene-based jet propellant 5 (JP-5). One or more large aboveground storage tanks (e.g., 15,000-gallon tank) would be required to store JP-5. The Triton UAS would also require supply support services from fuel delivery trucks and those providing vacuum defueling.

2.1.10 Personnel

Under the Proposed Action, up to 400 personnel would be stationed at an East Coast home base to support the Triton UAS. The personnel would consist primarily of enlisted personnel, led by a group of officers, and supported by a small contingent of contractor personnel. These personnel and their family members would gradually relocate to the home base facility and the surrounding areas in phases (from FY 2019 to FY 2023).

It is estimated that each of the 400 personnel associated with the Proposed Action would be accompanied by an average of about 1.3 family members (Department of Defense [DoD], 2014a). Therefore, approximately 914 people (400 personnel and 514 family members) would be relocated to a proposed East Coast home base and the surrounding areas. This projected number of personnel is considered a maximum, as a portion of the military personnel will be deployed to support overseas operations and will not be present at the East Coast home base during those deployments.

2.1.11 High Performance and Sustainable Building Requirements

Under any new facility construction, renovation, and demolition activities, the Navy and NASA are required to site, design, build, operate, maintain, re-use, and demolish facilities in a sustainable manner to minimize the resources they consume, maximize the benefits they provide, and minimize the wastes they generate (DoD, 2013; NASA Facilities Design Guide, 2012). Additionally, DoD Unified Facilities Criteria (UFC) 1-200-02 (DoD, 2014b) and NASA Facilities Design Guide (NASA, 2012) define the minimum requirements and guidance for sustainable buildings in the planning, design, construction, renovation, repair, maintenance, operation, and equipment installation in new and existing facilities (DoD, 2014b; NASA, 2012).

Aspects of these requirements include, but are not limited to, orienting facilities to maximize energy efficiencies, avoid development of sensitive land resources like prime farmlands, mitigate heat island effects, protect and conserve water, optimize energy efficiencies, and use environmentally preferable projects (e.g., those with made with recycled materials and biologically-based products (DoD, 2014b; NASA, 2012).

2.2 Development of the Range of Alternatives

2.2.1 Introduction

The implementing regulations of the National Environmental Policy Act (NEPA) provide guidance on the consideration of alternatives to a federally proposed action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable and to meet the purpose and need require detailed analysis.

2.2.2 Screening Factors

Potential alternatives that meet the purpose and need were evaluated against several screening factors as presented below.

- **(Tier 1) Geography:** To be considered geographically suitable, the airfield should be located such that the distance to its operations areas can be achieved in the required response times.
- **(Tier 2) Meet Tier 1 Factors, and Airspace and Mission Compatibility**:
  - **Part A**: Airfields should have unfettered access to compatible airspace (e.g., special use airspace (SUA) such as Restricted Areas, Warning Areas, or Prohibited Areas) and direct access to overwater operating areas. Current FAA regulations require special handling of unmanned aircraft in controlled airspace, which leads to operational constraints (e.g., takeoff and landing time restrictions such as nighttime flight limitations) and expense (e.g., dedicated chase aircraft). Airfields under or immediately adjacent to SUA allow the Triton UAS to launch, climb to altitude, and later return to the airfield with minimal interaction with civilian aircraft and without costly and operationally limiting mitigations. Direct access to overwater operating areas allows maximum operational flexibility and responsiveness, and minimizes the potential for overflights of populated areas.
  - **Part B: Mission Compatibility:** Airfield missions should be compatible with the Triton UAS missions. Incompatible airfield activities include flight research and testing and undergraduate pilot training.
- **(Tier 3) Meet Tier 1 and 2 Factors, and Compatible Facilities**:
  - **Part A:** The airfield should be able to support the Triton UAS with existing, renovated facilities beginning in FY 2019 and ultimately provide permanent facilities to support steady-state Triton UAS operations by FY 2023. The installation must be able to support additional personnel and their family members, who would gradually move to the surrounding areas in phases (from FY 2019 to FY 2023). Initial operational capability at the installation would begin in FY 2019 and full operational capability would be reached by FY 2023.
  - **Part B**: Existing Navy support functions and services should be available at the airfield to support the Triton UAS introduction timeline.

There were 118 DoD and NASA airfields that met the Tier 1 geographic screening factor, Tier 2 and Tier 3 screening factors were then applied. When screening factor (Tier 2) was applied, the list went from 118 to 7 because the locations primarily did not meet the Tier 2A factor. After Tier 3 screening factors were applied, the list narrowed from 7 to 3, which were carried forward for analysis.

2.3 Alternatives Carried Forward for Analysis

Of the alternative sites meeting the purpose of and need for the Proposed Action and those meeting all of the screening factors, however, only three candidate sites were identified and are analyzed within this Environmental Assessment (EA) as separate alternatives. These sites are Naval Air Station (NAS) Key West and Naval Station (NS) Mayport in Florida, and Naval Aeronautics and Space Administration's (NASA) Wallops Flight Facility (WFF) in Virginia.

2.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur; the Navy would not establish facilities or functions in support of the East Coast home basing and maintaining of the Triton UAS. Under

the No Action Alternative, the Navy would not achieve the required levels of operational readiness for the Triton UAS. The No Action Alternative would not meet the purpose of and need for the Proposed Action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in this EA and is used as a baseline for measuring the environmental consequences of the action alternatives.

2.3.2 Alternative 1: Naval Air Station Key West, Florida

Alternative 1 would establish an East Coast home base (also referred to as a Forward Operating Base [FOB]) for the Triton UAS at NAS Key West, Florida. Under this alternative, all associated infrastructure, equipment and supporting personnel necessary for a fully operational Triton UAS home base would be developed at NAS Key West, Boca Chica Airfield, including: airfield elements, hangar space, UAS control facility, power check pad, wash rack, battery storage, and other supply/storage facilities. Development of the proposed home base under Alternative 1 would involve new construction, use of existing infrastructure and services, and changes to installation land use as described below. Figure 2-1 depicts the Alternative 1 (NAS Key West) project area and identifies the proposed location of key infrastructure elements. As described herein, Alternative 1 meets all screening factors including geography, compatible airspace/missions, and compatible facilities.

Flight Operations and Airspace: Under Alternative 1, Triton UAS flight operations would use Runway 08/26 for launch and recovery. An average of five Triton UAS flight operations would occur each day and share Runway 08/26 with existing flight operations. Existing flight operations average 143 per day, based on an annual average of 52,000. Triton UAS flight operations at NAS Key West would use adjacent SUA (Warning Area 174C, [W-174C]). There are 37 nautical miles of overwater corridors between the Boca Chica airfield airspace and W-174C for approach, departure, and C-4 routes for Runway 08/26. Depending on weather and other aircraft activities in the area, Triton UAS flight operations may on rare occasions pass over populated areas south of Runway 08/26 on take-offs and landings. Under Alternative 1, Triton UAS operations would have unfettered access to compatible airspace, direct access to offshore operating areas, and would be compatible with current airfield activities.

Airfield Runway and Taxiway: In terms of geography, the NAS Key West Boca Chica Airfield represents the southernmost suitable airfield on the East Coast of the United States. The airfield experiences a light to medium level of activity. NAS Key West contains three runways including Runway 08/26 (10,001 by 200 feet), Runway 04/22 (7,002 by 200 feet), and Runway 14/32 (7,001 by 200 feet). However, only Runway 08/26 meets the 8,000-feet minimum runway length requirement for Triton UAS. Alternative 1 would use the existing runway, but construction of an additional taxiway segment and apron would be necessary to accommodate the size of the Triton UAS. Runway 08/26 includes arresting gear. The arresting cables would need to be disconnected prior to each Triton UAS flight operation. The elevation at NAS Key West Boca Chica Airfield is 6 feet above MSL.

Triton UAS Control Facility: Triton UAS control would be provided from the existing air traffic control tower (Building A-4202). Line of sight communications connectivity to Runway 08/26 would be maintained.

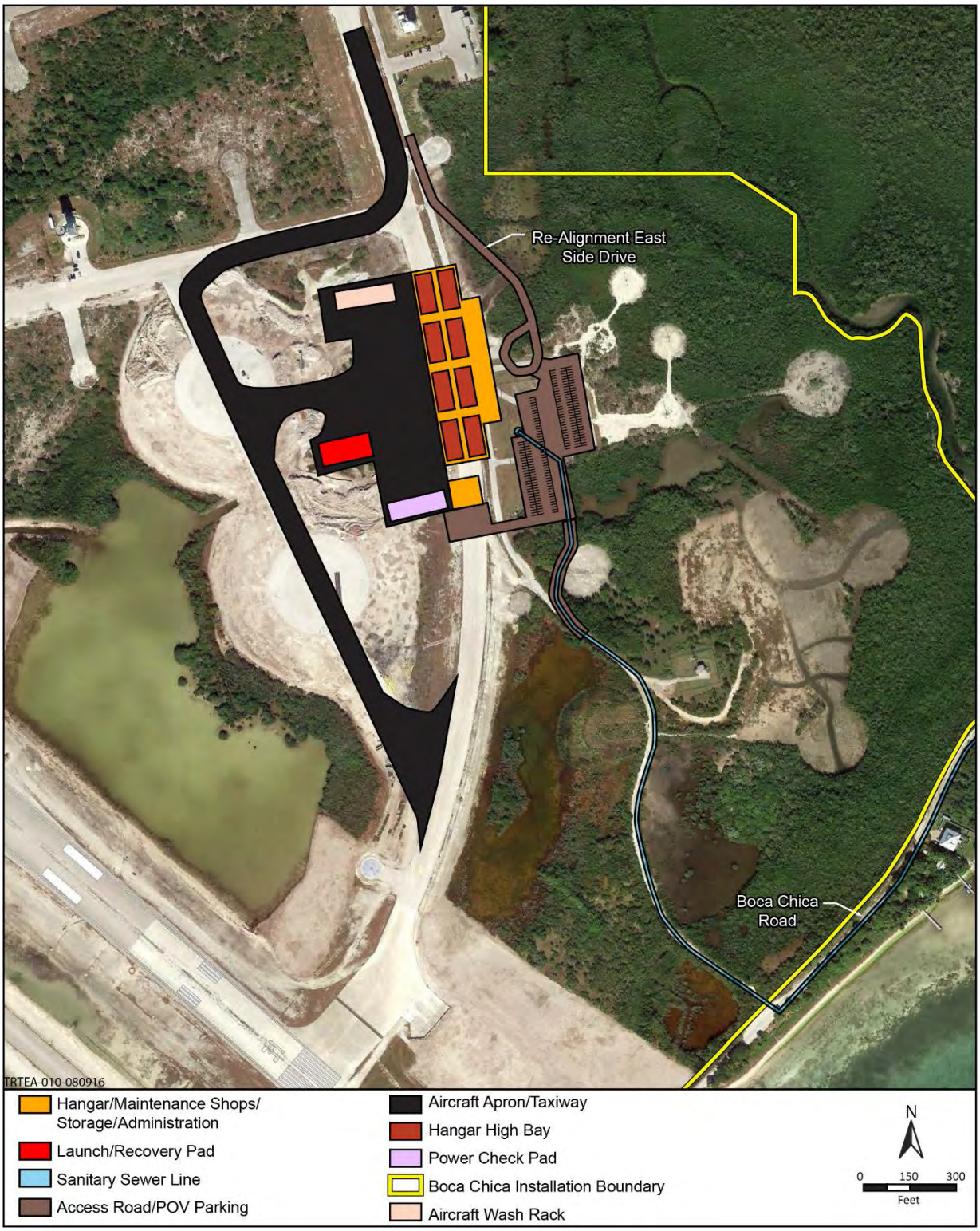

Figure 2-1 Naval Air Station Key West (Alternative 1) Project Area

Hangars and Pavement: Alternative 1 would require construction of a new hangar facility to accommodate up to eight Triton UAS aircraft at any time. The East Coast home base would support four primary assigned Triton UAS aircraft and have maintenance responsibility for four rotating Triton UAS aircraft from OCONUS. New construction of an aircraft hangar of approximately 150,000 square feet would be required to accommodate up to eight Triton UAS. The proposed hangar location is shown in Figure 2-1. The hangar would be situated on the existing taxiway and a new taxiway would be constructed around the site. A paved aircraft parking apron (approximately 3 acres) is proposed for new construction between the hangar and the taxiway. The parking apron would disturb approximately 3 acres of wetlands. New construction to accommodate parking for privately owned vehicles (POVs) is proposed east of the hangar and would accommodate up to 180 vehicles. A sewer line is also proposed to accommodate the increases in personnel in this area of the air station. The line would travel from the main administrative building, follow the southern portion of East Side Drive, and follow the existing Boca Chica Road to the closest Florida Keys Aqueduct Authority lift station. The total length of the line would be approximately 8,400 linear feet and ground disturbance would be limited to the paved road and immediately adjacent vegetated areas (i.e., road shoulder).

Demolition and Reconstruction Activities: Under Alternative 1, several installation modifications would occur to accommodate the Triton UAS infrastructure. A portion of the existing taxiway would be proposed for reuse as the Triton UAS hangar and adjacent warehouse sites. With this modification, a new taxiway would be constructed across previously disturbed terrain. To accommodate the proposed aircraft parking apron, power check pad, and wash rack, approximately 3 acres of wetlands would be impacted. To accommodate POV parking, two existing facilities (A-1004 and A-1005), along with associated fencing, would be demolished. Finally, the existing East Side Drive would be realigned and connected with the parking lot.

Power Check Pad: The power check pad required to support the Triton UAS would be constructed west of the proposed hangar location and parking apron. The power check pad (and blast shield) would be located on a paved area adjacent to the hangar, and would be approximately 19,260 square feet (180 by 107 feet) in size.

Aircraft Wash Rack: Under this alternative, construction of a new aircraft wash rack would be required as existing wash racks are not located nearby nor are they sized appropriately for the Triton UAS. The wash rack would be located on a paved area west of the proposed hangar and aircraft parking apron in an area approximately 161 by 78 feet (12,558 square feet) in size.

Battery Storage Facility: At NAS Key West, battery storage would be accommodated in the proposed warehouse, adjacent to the hangar facility.

Other Storage/Supply: At NAS Key West, storage/supply requirements would be accommodated in the proposed warehouse. NAS Key West has JP-5 aboveground storage tanks and fuel trucks in place to provide fuel and defuel services; no additional fuel services would be required.

Personnel: Under Alternative 1, up to 400 Triton UAS personnel (officers, enlisted, and contractors) would be stationed at NAS Key West. Assuming that each of these new personnel would be accompanied by an average of 1.3 family members (DoD, 2014), approximately 900 people would relocate to the neighborhoods and communities surrounding Boca Chica Airfield. No other facility construction or renovation is required to support this increase in personnel.

2.3.3 Alternative 2: Naval Station Mayport, Florida

Alternative 2 would establish an East Coast home base for the Triton UAS at NS Mayport, Florida. Under this alternative, all associated infrastructure, equipment, and supporting personnel necessary for a fully operational Triton UAS home base would be developed at NS Mayport including: airfield elements, hangar space, UAS control facility, power check pad, wash rack, battery storage and other supply/storage facilities. Development of the proposed home base under Alternative 2 would involve a mix of new construction, use of existing infrastructure and services, and changes to installation land use as described below. Figure 2-2 depicts the Alternative 2 (NS Mayport) project area and identifies the proposed location of key infrastructure elements. As described herein, Alternative 2 meets all screening factors including geography, compatible airspace/missions, and compatible facilities.

Flight Operations and Airspace: Under Alternative 2, Triton UAS flight operations would utilize Runway 05/23 for launch and recovery. An average of five Triton UAS flight operations would occur each day and share Runway 05/23 with existing flight operations at NS Mayport. Existing flight operations average 282 per day (or 103,000 annually). There are 19 nautical miles of overwater corridors between the 05/23 and W-135 for approaches and departures. Depending on weather and other aircraft activities in the area, Triton UAS flight operations may on rare occasions pass over populated areas on take-offs or landings. Under Alternative 2, Triton UAS operations would have unfettered access to compatible airspace, direct access to offshore operating areas, and would be compatible with current airfield activities.

Airfield Runway and Taxiway: The NS Mayport airfield experiences a light to medium level of flight activity. The airfield has a single runway—Runway 05/23 (8,001 by 200 feet). Alternative 2, NS Mayport, would utilize the existing runway, but construction of a new taxiway segment and apron would be necessary. The new taxiway segment would be approximately 750 feet in length. Runway 05/23 includes arresting gear. The arresting cables would need to be disconnected prior to each Triton UAS flight operation. The elevation at NS Mayport Admiral David L. McDonald Field is 15 feet above MSL and it is not located in the floodplain.

Triton UAS Control Facility: Triton UAS control would be provided from a proposed newly constructed control facility adjacent to the hangar complex. Line of sight communications connectivity to Runway 05/23 would be achieved based on the control facility location and design. A 160-foot cable would be buried between the mission control systems facility and an antenna tower. The antenna tower height would be 44 feet.

Hangars and Pavement: Alternative 2 would require construction of a new hangar facility to accommodate up to eight Triton UAS aircraft at any time. The East Coast home base would support four primary assigned Triton UAS aircraft and have maintenance responsibility for four rotating Triton UAS aircraft from OCONUS. New construction of an aircraft hangar of approximately 150,000 square feet would be required to accommodate up to eight Triton UAS. The proposed hangar location is shown in Figure 2-2. A paved, dedicated UAS parking apron (approximately 3 acres) is proposed for new construction between the hangar and the taxiway. New construction to accommodate parking for 180 POVs is proposed northwest of the hangar.

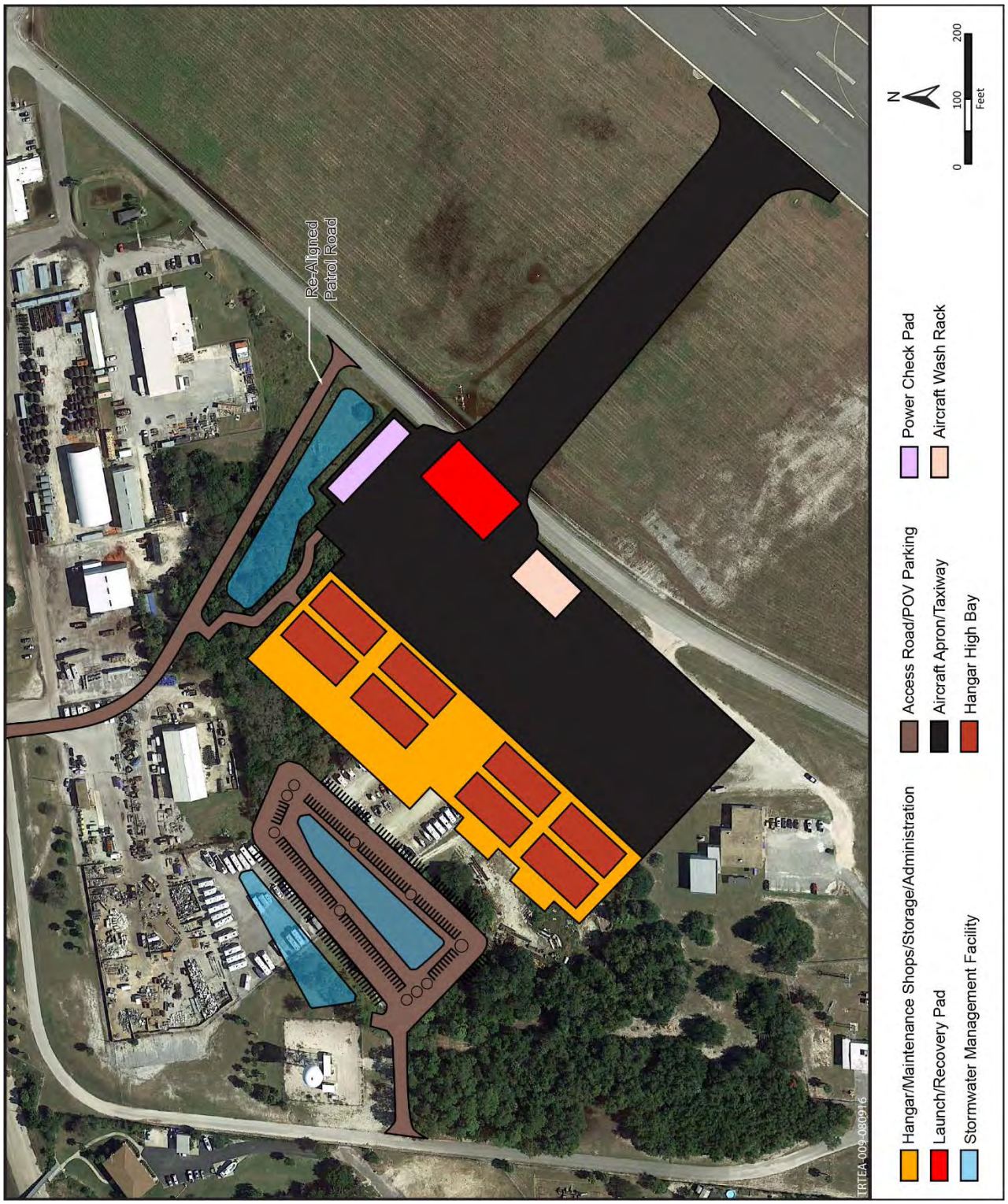

Figure 2-2 Naval Station Mayport (Alternative 2) Project Area

Demolition and Reconstruction Activities: Construction of Alternative 2 facilities would require occupying an approximate 10-acre site northwest of Runway 05/23. Use of this site by the Triton UAS facilities would require the relocation of the existing 4-acre Morale, Welfare, and Recreation Recreational Vehicle (RV) parking lot. The Morale, Welfare, and Recreation RV parking lot would need to be relocated to an area southwest of the current long-term deployed parking area. The RV parking relocation site would require tree mitigation, per the station's Forest Management Plan, for the close to 10 acres of trees that would be impacted.

Power Check Pad: The power check pad required to support the Triton UAS would be constructed southeast of the proposed hangar location and east of the parking apron. The power check pad (and blast shield) would be located on a paved area of approximately 19,260 square feet (180 by 107 feet) in size.

Aircraft Wash Rack: Under this alternative, construction of a new aircraft wash rack would be required as existing wash racks are not located nearby nor are they sized appropriately for the Triton UAS. The wash rack would be located on a paved area south of the proposed hangar and aircraft parking apron in an area approximately 161 by 78 feet in size, or 12,558 square feet.

Battery Storage Facility: At NS Mayport, an existing unused space is available for refurbishment to meet the battery storage facility requirement.

Other Storage/Supply: At NS Mayport, Triton UAS storage/supply requirements are met through existing base supply. Furthermore, storage and supply needs would be met through construction of the facility north of the hangar, which would primarily house the maintenance control and mission control systems. Additionally, the facility contains a vehicle garage, material control, lockers, hangar storage, and fire suppression equipment. Existing Navy facilities and functions are available to support Triton UAS operations in a timely manner. NS Mayport has JP-5 aboveground storage tanks and fuel trucks in place to provide fuel and defuel services; no additional fuel services would be required.

Personnel: Under Alternative 2, up to 400 Triton UAS personnel (officers, enlisted and contractors) would be stationed at NS Mayport. Assuming that each of these new personnel is accompanied by an average of 1.3 family members (DoD, 2014), approximately 900 people would relocate to the neighborhoods and communities surrounding NS Mayport. No other facility construction or renovation is required to support this increase in personnel.

2.3.4 Alternative 3: National Aeronautics and Space Administration Wallops Flight Facility, Virginia

Alternative 3 would establish an East Coast home base for the Triton UAS at the NASA WFF in Accomack County, Virginia. Under this alternative, all associated infrastructure, equipment, and supporting personnel necessary for a fully operational Triton UAS home base would be developed at WFF including: airfield elements, hangar space, UAS control facility, power check pad, wash rack, battery storage, and other supply/storage facilities. Development of the proposed home base under Alternative 3 would involve a mix of new construction, use of existing infrastructure and services, and changes to installation land use as described in the bullets below. Figure 2-3 depicts the Alternative 3 (WFF) project area and identifies the proposed location of key infrastructure elements. The Navy considered several optional locations within the WFF region before arriving at the WFF project area described in Alternative 3. As described herein, Alternative 3 meets all screening factors including geography, compatible airspace/missions, and compatible facilities.

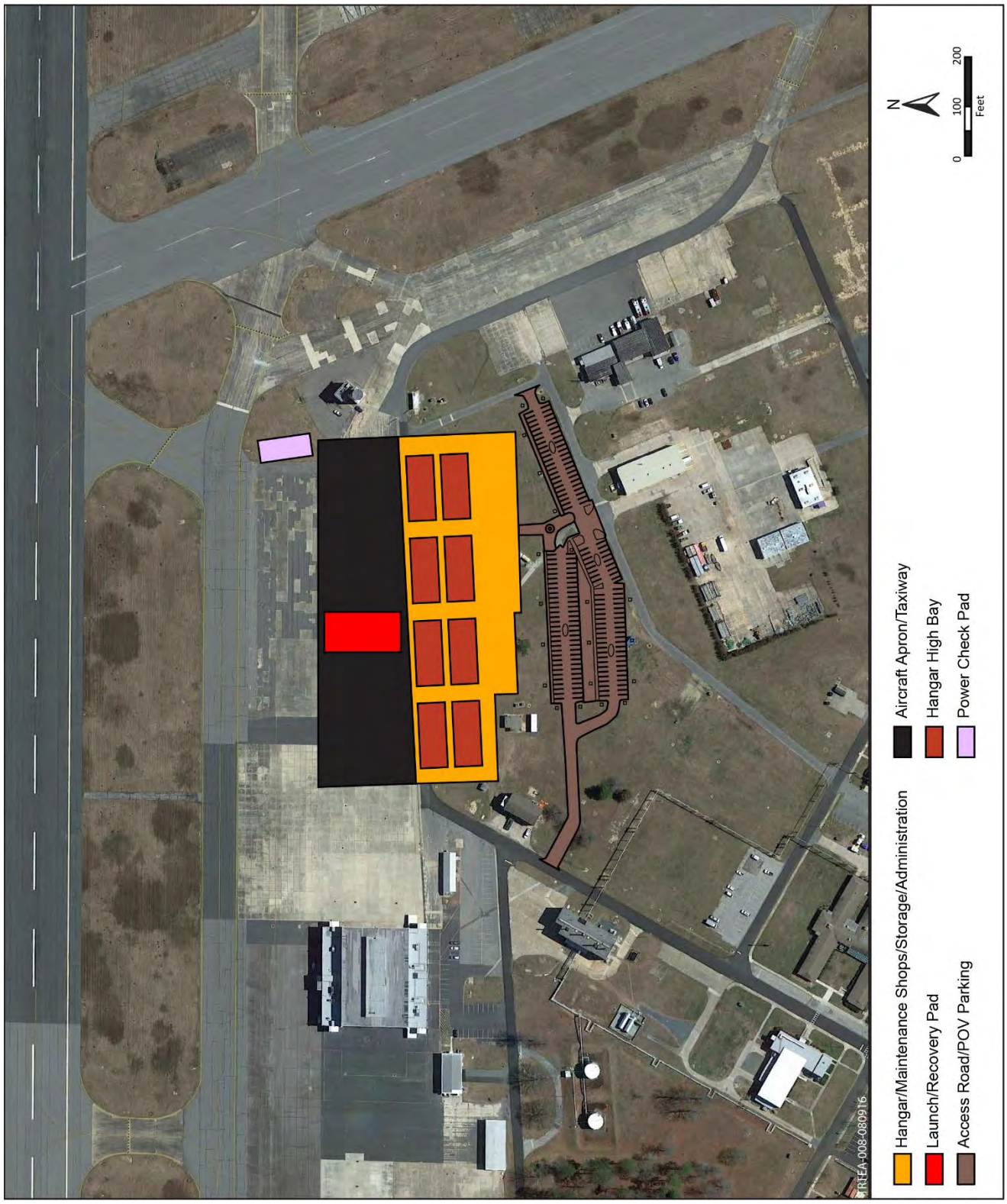

Figure 2-3 National Aeronautics and Space Administration Wallops Flight Facility (Alternative 3) Project Area

Flight Operations and Airspace: Under Alternative 3, Triton UAS flight operations would either use Runway 04/22 or 10/28 for launch and recovery (predominantly, Runway 04/22 would be used). An average of five Triton UAS flight operations would occur each day and share Runways 04/22 and 10/28 with existing flight operations, which average 44 per day (or a maximum of 61,000 annually). Depending on weather and other aircraft activities in the area, Triton UAS flight operations may on rare occasions pass over populated areas on take-offs or landings.

Currently, NASA WFF is designated an emergency landing location for Triton UAS test aircraft operating from NAS Patuxent River and the NASA Global Hawk (MQ-4C NASA equivalent). In fact, the Global Hawk (based at NASA Armstrong Flight Research Center in California) conducted detachment operations at WFF in 2012 through 2015, totaling over 37 flights. Under Alternative 3, Triton UAS operations would have unfettered access to compatible airspace, direct access to offshore operating areas, and would be compatible with current airfield activities.

Airfield Runway and Taxiway: The WFF airfield represents the northernmost suitable airfield on the East Coast of the U.S. WFF contains two usable runways including: Runway 04/22 (8,748 by 150 feet) and Runway 10/28 (8,005 by 200 feet). WFF has a third runway (17/35), but its length does not meet the minimum Triton UAS requirements. The WFF alternative would use existing runways, taxiways, and aprons. Runway 04/22 includes arresting gear, so they would need to be disconnected prior to each Triton UAS flight operation on that runway. The WFF airfield is not in a floodplain and has elevations of approximately 34 to 41 feet above MSL.

Triton UAS Control Facility: Triton UAS control would be provided from a proposed new control facility adjacent to the hangar complex. Line of sight communications connectivity to Runway 04/22 and Runway 10/28 would be achieved based on the control facility location and design.

Hangars and Pavement: Alternative 3 would require construction of a new hangar facility to accommodate up to eight Triton UAS aircraft at any time. The East Coast home base would support four primary assigned Triton UAS aircraft and have maintenance responsibility for four rotating Triton UAS aircraft from OCONUS. New construction of an aircraft hangar of approximately 150,000 square feet is required to accommodate up to eight Triton UAS. The proposed hangar location is shown in Figure 2-3. A paved aircraft parking apron (approximately 3 acres) is proposed between the hangar and the taxiway and would take advantage of existing paved aircraft parking area. New construction to accommodate POV parking is proposed south of the hangar and would accommodate up to 180 vehicles.

Demolition and Reconstruction Activities: Under Alternative 3, several installation modifications would occur to accommodate the Triton UAS infrastructure. The proposed Triton UAS hangar and adjacent warehouse sites would be constructed on previously disturbed terrain consisting of a mix of grass and paved surfaces. To accommodate the proposed aircraft parking apron, power check pad, and wash rack, already paved surfaces would be repurposed for the new functions. To accommodate POV parking, previously disturbed surfaces would be developed.

Power Check Pad: The power check pad required to support the Triton UAS would be constructed north of the proposed hangar and parking apron. The power check pad (and blast shield) would be located on a paved area approximately 19,260 square feet (180 by 107 feet) in size.

Aircraft Wash Rack: Under this alternative, no new construction of a wash rack would be required. The existing wash rack for the Global Hawk UAS is sized so that it can support the slightly larger wingspan of the Triton UAS.

Battery Storage Facility: At WFF, construction of new space would be required for battery storage to meet this requirement and would be accommodated in the proposed warehouse adjacent to the hangar facility.

Other Storage/Supply: At WFF, storage/supply requirements would be accommodated in the new warehouse construction. Existing NASA facilities and functions are available to support Triton UAS operations in a timely manner. WFF would require JP-5 aboveground storage and dedicated trucks to provide fuel and defuel services.

Personnel: Under Alternative 3, up to 400 Triton UAS personnel (officers, enlisted and contractors) would be stationed at WFF. Assuming that each of these new personnel would be accompanied by an average of 1.3 family members (DoD, 2014), approximately 900 people would relocate to the neighborhoods and communities surrounding the NASA facility. No other facility construction or renovation is required to support this increase in personnel.

2.4 Alternatives Considered but not Carried Forward for Detailed Analysis

The following alternatives were considered, but not carried forward for detailed analysis in this EA as they did not meet the purpose of and need to base Triton UAS aircraft on the East Coast or satisfy the alternative screening factors presented in Section 2.2.

2.4.1 Patrick Air Force Base, Florida

This alternative would establish a home base for the Triton UAS at Patrick Air Force Base (AFB), Florida. This alternative was considered but not carried forward for detailed analysis in the EA based on factor Tier 3—Compatible Facilities. Compatible airspace is available immediately adjacent to Patrick AFB. However, the airfield is unable to support Triton UAS operations, maintenance, and personnel within the project timeframe. Because this alternative would involve the construction of a Navy Triton UAS home base on an Air Force base, there is increased difficulty in establishing that operations, maintenance, and personnel would be ready to timely support the Triton UAS East Coast FOB mission requirements considering the current uses of the facility. In addition to Navy approval for the Triton UAS home basing, separate Air Force approval would be required for siting of facilities and operation of Navy aircraft on Patrick AFB. Based on meeting the operational timeline factor, establishing a Triton UAS East Coast home base at Patrick AFB was eliminated as an alternative for analysis in this EA.

2.4.2 Cape Canaveral Air Force Station, Florida

This alternative would establish a home base for the Triton UAS at Cape Canaveral Air Force Station (AFS), Florida. This alternative was considered but not carried forward for detailed analysis in the EA based on factor Tier 3—Compatible Facilities. Compatible airspace is readily available at Cape Canaveral AFS. Special use airspace (i.e., R-2932, R-2933, and W-497A) covers all approaches, departures, and C-4 routes to Runway 13/31. This runway is also of sufficient dimensions (10,000 by 200 feet). There would not be overflights of populated areas in the terminal area; however, as mentioned in Section 2.2, compatible facilities or the ability of the airfield to meet facilities requirements within the operational timeline is a factor that must be met. The airfield must be ready to support Triton UAS operations, maintenance, and personnel within the project timeframe. Because this alternative would involve the construction of a Navy Triton UAS home base on an Air Force station, there is increased difficulty in establishing that operations, maintenance, and personnel would be ready to timely support the Triton UAS East Coast FOB mission requirements. In addition to Navy approval for the Triton UAS home basing, separate Air Force approval would be required for siting of facilities and operation of Navy

aircraft on Cape Canaveral AFS. Based on meeting the operational timeline factor, establishing a Triton UAS East Coast home base at Cape Canaveral AFS was eliminated as an alternative for analysis in this EA.

2.4.3 Naval Air Station Jacksonville, Florida

This alternative would establish a home base for the Triton UAS at NAS Jacksonville, Florida. This alternative was considered but not carried forward for detailed analysis in the EA based on factor Tier 2 (Part A)—Compatible Airspace/Direct Access to Overwater Operating Areas. As outlined in Section 2.2, operational considerations include the need for compatible SUA located near the airfield and direct access to overwater operating areas in order to minimize overflight of populated areas. At NAS Jacksonville, Florida, Triton UAS flights would need to traverse a vast amount of populated area before reaching compatible airspace and overwater operating areas. Therefore, establishing a Triton UAS East Coast home base at NAS Jacksonville was eliminated as an alternative for analysis in this EA.

2.4.4 Naval Air Station Patuxent River, Maryland

This alternative would establish a home base for the Triton UAS at NAS Patuxent River, Maryland. This alternative was considered but not carried forward for detailed analysis in the EA based on factors Tier 2 (Part A)—Compatible Airspace/Direct Access to Overwater Operating Areas and Tier 2 (Part B)—Compatible Usage. As outlined in Section 2.2, airfields should have direct access to compatible airspace and overwater operating areas. Although NAS Patuxent River has access to compatible airspace over the Chesapeake Bay and Atlantic Ocean, it is located further inland than preferred for Triton UAS operations. Section 2.2 additionally contains a screening factor for the ability to establish the Triton UAS at an installation with compatible usage and missions. NAS Patuxent River is a testing and evaluation installation that provides the Navy and tenant commands support with research, development, testing and evaluation, acquisition, engineering and fleet support to the entire range of manned and unmanned naval aircraft, engines, avionics, aircraft support systems and ship/shore/air operations. The existing testing usage and missions at NAS Patuxent River make it incompatible for Triton UAS operations.

3 Resource Definitions, Regulatory Setting, and Approach to Analysis

3 RESOURCE DEFINITIONS, REGULATORY SETTING, AND APPROACH TO ANALYSIS

Chapter 3 provides the definitions of the resources analyzed in detail for this Environmental Assessment (EA), the regulatory setting where applicable, and a general description of the approach to analysis for the resources potentially affected by the three action alternatives described in Chapter 2.

3.1 Noise

3.1.1 Definition

Noise can be defined as any unwanted sound. Sound is all around us and becomes noise when it interferes with normal activities such as sleep and conversation. The principal human response to noise is annoyance. Human response to noise can vary according to the type and source of the noise, the distance between the source and the human receptor, the perceived importance of the noise, its appropriateness in the setting, and the sensitivity of the person receiving the noise (i.e., receptor).

The measurement and human perception of sound involves three basic physical characteristics: intensity, frequency, and duration. Intensity is a measure of the acoustic energy of the sound vibrations and is expressed in terms of sound pressure. As sound pressure increases, the energy carried by the sound increases, and the perception of loudness of that sound also increases. Frequency is the number of times per second the air vibrates or oscillates. Low-frequency sounds are characterized as rumbles or roars, while sirens or screeches typify high-frequency sounds. Duration is the length of time the sound can be detected.

The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times higher than those of sounds that can barely be detected. Because of this vast range, using a linear scale to represent the intensity of sound becomes very unwieldy. As a result, a logarithmic unit known as the decibel (dB) is used to represent the intensity of a sound. Such a representation is called a sound level. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB and a garbage disposal has a sound level of about 80 dB. Sound levels above 120 dB begin to be felt inside the human ear as discomfort. Sound levels between 130 and 140 dB are felt as pain (Berglund and Lindvall, 1995). Because of the logarithmic nature of the dB unit, sound levels cannot be arithmetically added or subtracted and are somewhat cumbersome to handle mathematically. However, some simple rules are useful in dealing with sound levels. If a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level (Berglund and Lindvall, 1995). The following are examples:

- 60 dB + 60 dB = 63 dB
- 80 dB + 80 dB = 83 dB

The total sound level produced by two sounds of different levels is usually only slightly more than the higher of the two. The following is an example:

- 60.0 dB + 70.0 dB = 70.4 dB

The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB (Berendt et al., 1976). On average, a person perceives a change in sound level of about 10 dB as a doubling (or halving) of the sound's loudness, and this relation holds true for loud

and quiet sounds. A decrease in sound level of 10 dB actually represents a 90-percent decrease in sound intensity but only a 50-percent decrease in perceived loudness because of the nonlinear response of the human ear (similar to most human senses) (Berglund and Lindvall, 1995).

Noise measurements assessed relative to human exposure are usually expressed using an A-weighted scale that filters out very low and high frequencies to replicate human sensitivity. It is common to add the letter "A" to the unit of measurement (dBA) to identify that the measurement has been made with this filtering process. Human hearing ranges from approximately 20 dBA (threshold of hearing) to between 130 and 140 dBA (threshold of pain).

3.1.2 Approach to Analysis

Noise levels in this EA are presented through two noise metrics: Sound Exposure Level (SEL) and Day-Night Average Sound Level (DNL). The SEL is a composite noise metric that represents the intensity and duration of a sound. Individual noise events (e.g., takeoffs or landings) have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. SEL provides a measure of the net impact of the entire acoustic event; however, it does not directly represent the sound level heard at any given time. During an aircraft flyover, SEL captures the total sound energy from the beginning of the acoustic event to the point when the receiver no longer hears the sound. It then condenses that energy into a 1-second time period, and the metric represents the total sound exposure received. SEL has proven to be a good metric to compare the relative exposure of transient sounds, such as aircraft overflights (Department of Defense [DoD] Noise Working Group, 2009).

The DNL metric is the energy-averaged sound level measured over a 24-hour period, with 10 dBs added to noise events occurring between 10:00 p.m. and 7:00 a.m. (identified as acoustic night). This accounts for added sensitivity of receptors to noise during the nighttime. DNL values are average quantities, mathematically representing the continuous sound level that would be present if all of the variations in sound level that occur over a 24-hour period are averaged, to have the same total sound energy.

Noise levels of the loudest aircraft operations significantly influence the 24-hour average. For example, if one daytime aircraft overflight measuring 100 dBA for 30 seconds occurs within a 24-hour period in a 50-dBA noise environment, the DNL would be 65.5 dB. If 10 of the 30-second aircraft overflights occur during daytime hours in the 24-hour period, the DNL would be 75.4 dB. Therefore, a few maximum sound events occurring during a 24-hour period would have a strong influence on the 24-hour DNL, even though lower sound levels from other aircraft between these flights could account for the majority of the flight activity.

3.2 Public Health and Safety

3.2.1 Definition

The public health and safety discussion in the EA includes consideration of any activities, occurrences, or operations that have the potential to affect the safety, well-being, or health of members of the public. The primary goal is to identify and prevent potential accidents or impacts on the general public.

Human health and safety addresses public safety during construction, demolition, and renovation activities; and during subsequent operations of those facilities and aircraft. Various stressors in the environment can adversely affect human health and safety. Identification and control or elimination of these stressors can reduce risks to health and safety to acceptable levels or eliminate risk entirely.

The Air Installations Compatible Use Zones (AICUZ) Program delineates accident potential zones (APZs), which are areas around an airfield where an aircraft mishap is most likely to happen. APZs are not predictors of accidents nor do they reflect accident probability. The DoD defines an APZ as a planning tool for local planning agencies. The APZs follow departure, arrival, and flight pattern tracks from an airfield and are based upon historical accident data.

3.2.2 Regulatory Setting

Aircraft safety is based on the physical risks associated with aircraft flight. Military aircraft fly in accordance with Federal Aviation Regulations (FAR) Part 91, *General Operating and Flight Rules*, which govern such things as operating near other aircraft, right-of-way rules, aircraft speed, and minimum safe altitudes. The Federal Aviation Administration (FAA) is responsible for ensuring safe and efficient use of United States (U.S.) airspace by military and civilian aircraft and for supporting national defense requirements. In order to fulfill these requirements, the FAA has established safety regulations, airspace management guidelines, a civil-military common system, and cooperative activities with the DoD. These rules include the use of tactical training and maintenance test flight areas, arrival and departure routes, and airspace restrictions to help control air operations. In addition, naval aviators must also adhere to the flight rules, Air Traffic Control (ATC), and safety procedures provided in Navy guidance.

Specific Navy requirements are outlined in Chief of Naval Operations (OPNAV) Instructions (OPNAVINST) 3710.7 (series), *Naval Air Training and Operating Procedures Standardization* (NATOPS) manual, which provides processes and procedures that improve combat readiness and achieve a substantial reduction in the aircraft mishap rate thereby safeguarding people and resources. Additionally, the Naval Air Systems Command (NAVAIR) 00-80T-114, *NATOPS Air Traffic Control Manual*, provides air traffic control services to aircraft using military-controlled airspace. Finally, the joint instruction OPNAVINST 11010.36C and Marine Corps Order 11010.16 provides guidance administering the AICUZ program, which recommends land uses that are compatible with noise levels, accident potential, and obstruction clearance criteria for military airfield operations. Wallops Flight Facility (WFF) Aviation Safety Program addresses National Aeronautical and Space Administration (NASA) safety requirements; it is overseen by their Aviation Safety Council and coordinated by an on-site WFF Aviation Safety Office.

The AICUZ program was established by the DoD to analyze operational training requirements and to address communities' concerns about aircraft noise and accident potential. The program goals are to protect the safety, welfare, and health of those who live and work near military airfields while preserving the military flying mission. The primary safety concern with regard to military training flights is the potential for aircraft mishaps to occur, which could be caused by mid-air collisions with other aircraft or objects, weather difficulties, mechanical failures, pilot error, or Bird/Animal Aircraft Strike Hazard (BASH) strikes. There is no generally recognized threshold of air safety that defines acceptable or unacceptable conditions. Instead, the focus of airspace managers is to reduce risks through a number of measures. These include, but are not limited to, providing and disseminating information to airspace users, requiring appropriate levels of training for those using the airspace, setting appropriate standards for equipment performance and maintenance, defining rules governing the use of airspace, and assigning appropriate and well-defined responsibilities to the users and managers of the airspace. When these safety measures are implemented, risks are minimized, even though they can never be eliminated.

All construction and demolition on federal property is performed in accordance with applicable Occupational Safety and Health Administration (OSHA) regulations. Specific practices and policies to

protect human health and minimize safety risks are coordinated between contractors and the air station prior to initiation of construction and demolition activities.

3.2.3 Approach to Analysis

Safety addresses flight safety or aircraft mishaps, BASH, as well as APZs. Weapons and construction safety are not addressed because no weapons are associated with the Proposed Action and construction/renovation activities would be compliant with all relevant occupational health and safety, and anti-terrorism/force protection requirements.

3.2.3.1 Aircraft Mishaps

Aircraft mishaps could be caused by mid-air collisions with other aircraft or objects, weather difficulties, mechanical failures, pilot error, or BASH. As shown in Table 3-1, mishaps are broken down into four categories, based on the severity of the mishap in relation to property damage or personnel injury (DoD, 2011). Class A mishaps are the most severe with total property damage of $2 million or more or a fatality and/or permanent total disability.

Table 3-1 Aircraft Class Mishaps

Mishap Class	*Total Property Damage*	*Fatality/Injury*
A	$2,000,000 or more and/or aircraft destroyed	Fatality or permanent total disability
B	$500,000 or more but less than $2,000,000	Permanent partial disability or three or more persons hospitalized as inpatients
C	$50,000 or more but less than $500,000	Nonfatal injury resulting in loss of one or more days from work beyond day/shift when injury occurred
D	$20,000 or more but less than $50,000	Recordable injury or illness not otherwise classified as A, B, or C

Source: DoD, 2011.

3.2.3.2 Accident Potential Zones

In the 1970s and 1980s, recognizing the need to identify areas of accident potential, the services conducted studies of historic aircraft accidents throughout the U.S. The studies showed that most aircraft mishaps occur on or near the runway, diminishing in likelihood with distance. Based on these studies, the Navy and other services have identified APZs. APZs are areas where aircraft accidents are most likely to occur, if they were to occur; they are not predictors of accidents. APZs follow departure, arrival, and pattern flight tracks, and are based upon analysis of flight operations data. While the likelihood of a mishap is remote, the Navy recommends restricting people-intensive uses within these zones.

3.2.3.3 Bird/Animal Aircraft Strike Hazards

BASH is defined as the threat of aircraft collisions with birds and wildlife during aircraft operations. It is a safety concern at all airfields due to the frequency of aircraft operations and the possibility of encountering birds at virtually all altitudes. The ATC and Environmental Divisions have primary responsibility for implementing accident preventative measures.

3.3 Air Quality

The air quality analysis considers criteria pollutants, conformity evaluation, operating permits, greenhouse gas (GHG) emissions, and climate change. Air pollutants are emitted from stationary and mobile sources.

3.3.1 Definition

Air quality is defined by ambient air concentrations of specific pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern related to the health and welfare of the general public and the environment and are widespread across the U.S.

3.3.2 Regulatory Setting

3.3.2.1 Criteria Pollutants and National Ambient Air Quality Standards

The primary pollutants of concern are called "criteria pollutants" and include carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter less than or equal to 10 microns in diameter (PM_{10}), fine particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead. Under the Clean Air Act (CAA), the USEPA has established National Ambient Air Quality Standards (NAAQS) (40 Code of Federal Regulations [CFR] part 50) for these pollutants. These standards, as depicted in Table 3-2, represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety. Both stationary and mobile sources are measured to determine emissions levels. Short-term standards (1-, 8-, and 24-hour periods) are established for pollutants contributing to acute health effects, while long-term standards (quarterly and annual averages) are established for pollutants contributing to chronic health effects.

Table 3-2 National Ambient Air Quality Standards

Pollutant	*Averaging Time*	*Primary Standards*	*Secondary Standards*
CO	8-hour 1-hour	9 ppm (10 mg/m^3) 35 ppm (40 mg/m^3)	None
Pb	Rolling 3-Month Average	0.15 µg/m^3	Same as Primary
NO_2	Annual (arithmetic average)	53 ppb	Same as Primary
	1-hour	100 ppb	None
PM_{10}	24-hour	150 µg/m^3	Same as Primary
$PM_{2.5}$	Annual Mean	12.0 µg/m^3	15.0 µg/m^3
	24-hour	35 µg/m^3	Same as Primary
O_3	8-hour	0.070 ppm	Same as Primary
SO_2	3-hour	None	0.5 ppm
	1-hour	75 ppb	None

Source: USEPA, 2011.
Legend: ppb – parts per billion; ppm – parts per million; mg/m^3– milligrams per cubic meter; µg/m^3 – micrograms per cubic meter.

In addition to the NAAQS for criteria pollutants, national standards exist for hazardous air pollutants, which are regulated under Section 112(b) of the 1990 CAA Amendments. The National Emission Standards for Hazardous Air Pollutants regulate hazardous air pollutants emissions from stationary sources (40 CFR part 61).

Hazardous air pollutants emitted from mobile sources are called Mobile Source Air Toxics. Mobile Source Air Toxics are compounds emitted from highway vehicles and nonroad equipment, which are

known or suspected to cause cancer or other serious health and environmental effects. In 2001, the USEPA issued its first Mobile Source Air Toxic Rule, which identified 21 compounds as being hazardous air pollutants that required regulation. A subset of six of these Mobile Source Air Toxic compounds were identified as having the greatest influence on health: benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter. In February 2007, the USEPA issued a second Mobile Source Air Toxic Rule, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. The second rule also identified several engine emissions certification standards that must be implemented (40 CFR parts 59, 80, 85, and 86; Federal Register 72 No. 37, pp. 8427–8570, 2007).

Unlike the criteria pollutants, there are no NAAQS for benzene and other hazardous air pollutants. The primary control methodologies for these pollutants for mobile sources involves reducing their content in fuel and altering the engine operating characteristics to reduce the volume of pollutant generated during combustion.

3.3.2.2 General Conformity

Federal actions are required to conform with the approved State Implementation Plan for those areas of the U.S. designated as nonattainment or in maintenance for any criteria air pollutant under the CAA (40 CFR parts 51 and 93). As all of the alternatives identified to implement the Proposed Action are located within an area in attainment for all criteria air pollutants, the action is not subject to the general conformity rule.

3.3.2.3 Title V (Operating Permit)

The Title V Operating Permit Program consolidates all CAA requirements applicable to the operation of a stationary source, including requirements from the State Implementation Plan, preconstruction permits, and the air toxics program. It applies to stationary sources of air pollution that exceed the major stationary source emission thresholds, as well as other non-major sources specified in a particular regulation. Federal installations subject to Title V permitting will comply with the requirements of the Title V Operating Permit Program, which are detailed in 40 CFR part 70 and all specific requirements contained in their individual permits. Regardless of the alternative, Title V permitting requirements will be completed per regulation, therefore, this facet of air quality is not carried forward for further evaluation.

3.3.2.4 Climate Change

Climate change refers to any significant change in the measures of climate lasting for an extended period of time (USEPA, 2016). It is now well established that rising global atmospheric GHG emissions are significantly affecting the earth's climate (CEQ, 2016). These gases act like a blanket around the earth, trapping energy in the atmosphere and causing it to warm (USEPA, 2016). According to the USEPA, the global average temperature has increased by more than 1.5 degrees Fahrenheit since the late 1800s. The buildup of GHGs in the atmosphere and the warming of the planet are responsible for other changes, such as:

- changing precipitation patterns;
- increases in ocean temperatures, sea level, and acidity;
- melting of glaciers and sea ice;
- changes in the frequency, intensity, and duration of extreme weather events;

- changing ecosystems, which influence the geographic ranges of many plant and animal species and the timing of their lifecycle events, such as migration and reproduction;
- increasing threats to human health; and
- worsening air and water quality, increasing the spread of certain diseases, and altering the frequency or intensity of extreme weather events (USEPA, 2016).

Natural causes alone cannot explain all of these changes. Human activities are contributing to climate change, primarily by releasing tons of CO_2 and other heat-trapping gases, into the atmosphere every year. Most of the warming of the past half century has been caused by human emissions of greenhouse gases. A variety of human activities generates GHGs, including burning fossil fuels for heat and energy, clearing forests, fertilizing crops, storing waste in landfills, raising livestock, and producing some kinds of industrial products (USEPA, 2016). GHGs are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming has negative economic and social consequences across the globe.

Final guidance from the Council on Environmental Quality (CEQ), dated August 1, 2016, recommends that agencies consider both the potential effects of a proposed action on climate change, as indicated by its estimated greenhouse gas emissions, and the implications of climate change for the environmental effects of a proposed action. The guidance also emphasizes that agency analyses should be commensurate with projected GHG emissions and climate impacts, and should employ appropriate quantitative or qualitative analytical methods to ensure useful information is available to inform the public and the decision-making process in distinguishing between alternatives and mitigations. It recommends that agencies consider 25,000 metric tons of carbon dioxide equivalent (CO_2e) emissions on an annual basis as a reference point below which a quantitative analysis of GHG is not recommended unless it is easily accomplished based on available tools and data.

The USEPA issued the Final *Mandatory Reporting of Greenhouse Gases Rule* on September 22, 2009. Covered under the Final *Mandatory Reporting of Greenhouse Gases Rule*, GHGs are carbon dioxide (CO_2), methane, nitrogen oxide (NO_x), hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers. Each GHG is assigned a global warming potential. The global warming potential is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming potential rating system is standardized to CO_2, which has a value of one. The equivalent CO_2 rate is calculated by multiplying the emissions of each GHG by its global warming potential and adding the results together to produce a single, combined emissions rate representing all GHGs. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of mobile sources and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions as CO_2e are required to submit annual reports to USEPA.

The federal government has been active over the past decade in planning for climate change. Most recently, the President of the U.S. signed the Paris Agreement in December 2015, establishing a long term, durable global framework to reduce global GHG emissions. Over the past decade, multiple policies have been implemented to address issues surrounding climate change, including the Energy Independence and Security Act of 2007; Greenhouse Gas Reporting Program (74 Federal Register 56260, 2008) (40 CFR part 98); President Obama's Climate Action Plan 2013; and Executive Order (EO) 13693, *Planning for Federal Sustainability in the Next Decade* (March 2015). Together these policies aim to reduce carbon pollution and increase renewable energy generation.

To implement these policies, the DoD issued a new policy in January 2016 that integrates climate change considerations into all aspects of the department (DoD Directive 4715.21). The directive furthers DoD's effort to adapt current and future operations to address the impacts of climate change. Mission planning and execution include identification and assessment of the effects of climate change on the mission, considers climate change adaptation and resiliency in installation planning and basing processes, integrates climate change considerations into acquisition strategies across the life cycle of weapons, platforms, and equipment, as well as DoD training range sustainment policies. DoD components are also charged with assessing, managing risks, and mitigating the effects of climate change on natural and cultural resource management, force structure, basing, and training and testing activities in the field environment. The directive affects every aspect of DoD from assessing security risks posed by climate change, to planning for disaster relief in the case of climate change impacts and instability sparked by a lack of natural resources.

Additionally, the DoD 2016 Operational Energy Strategy sets forth plans to reduce the demand for energy and secure energy supplies. This policy also directs DoD components to reduce GHG emissions from operational forces. Other recent policies, updates, and/or directives include Fiscal Year (FY) 2015 *DoD Sustainability Performance Plan*, and *2014 Climate Change Adaptation Roadmap*, which focus on various actions DoD is taking to increase its resilience to the impacts of climate change.

The U.S. Navy implements these federal and DoD policies to reduce energy usage, GHG emissions, and energy vulnerability. In 2010, the Secretary of Navy set goals to improve energy security, increase energy independence, and reduce the reliance on petroleum by increasing the use of alternative energy. These goals include:

- Sail the "Great Green Fleet": The U.S. Navy will demonstrate a Green Strike Group in local operations by 2012 and sail a Green Strike Group by 2016 (U.S. Navy, 2016). This goal was achieved. In 2012, the Nimitz Carrier Strike Group demonstrated the first Great Green Fleet at the 2012 Rim of the Pacific Exercise. In January 2016, the John C. Stennis Carrier Strike Group deployed as the first Great Green Fleet. In June 2016, the Eisenhower Carrier Strike Group deployed as part of the Great Green Fleet initiative.
- Reduce Non-Tactical Petroleum Use: By 2015, the U.S. Navy will reduce petroleum use in the commercial fleet by 50 percent. This goal was achieved.
- Increase Alternative Energy Ashore: By 2020, the U.S. Navy will produce at least 50 percent of shore-based energy requirements from alternative sources; 50 percent of U.S. Navy installations will be net-zero.
- Increase Alternative Energy Use U.S. Navy-Wide: By 2020, 50 percent of all U.S. Navy energy consumption will come from alternative sources.
- Energy Efficient Acquisition: Evaluation of energy factors will be mandatory when awarding contracts for systems and buildings. The Navy has issued policy guidance concerning the use of energy-related factors in acquisition planning, technology development, and source selections for platforms and weapons systems (U.S. Navy, 2016).

The 1 gigawatt renewable energy generation initiative is the principal means of achieving the 50 percent alternative energy goal. The initiative requires the U.S. Navy to bring 1 gigawatt of renewable energy into procurement by the end of 2015, which it achieved as of January 2016, and integration of renewable energy into the installation electrical grid (U.S. Navy, 2016). These alternative energy sources (e.g., solar) typically involve the use of fewer fossil fuels and emit fewer GHGs.

Each region and each installation is required to build an energy plan to help achieve these (and related) goals. Leaders and planners must consider the 50 percent level as a minimum "going-in" target for their energy plans; net-zero remains the full goal (U.S. Navy, 2012).

3.3.3 Approach to Analysis

The Proposed Action would include facility construction and/or modification activities at all of the proposed alternative locations. Factors needed to derive construction source emission rates were obtained from the following:

- National Estimator, Parametric Cost Engineering System, and the California Emission Estimator Model information for equipment list.
- The cumulative hours of operation are based on the productivity of the equipment or process; productivity of the equipment is based on a number of sources including:
  - Parametric Cost Engineering System and 2012 National Construction Estimator (Craftsman Book Company, 2012).
  - Project Management for Construction, Fundamental Concepts for Owners, Engineers, Architects, and Builders, Version 2.2. (Henderson, 2008).
  - Equipment manufacturer's websites such as Freightliner and Caterpillar.
- USEPA Open Burning and Construction Activities: Improved PM Fine Emission Estimation Techniques in the National Emissions Inventory, Appendix F Debris Estimating Guides.
- Estimated speed based on Project Management for Construction, Fundamental Concepts for Owners, Engineers, Architects, and Builders, Version 2.2 (Henderson, 2008).

The analysis estimates construction equipment that would most likely operate in 2018. The analysis also reduced PM_{10} emissions from earth-moving activities by 75 percent from uncontrolled levels by implementing fugitive dust control reductions. These practices include wetting soils, covering soil conveyances, and/or early paving of roads to minimize dust generation.

Operational emissions associated with the Proposed Action would include emissions associated with aircraft operations and associated personnel increases. Air quality impacts associated with Triton unmanned aircraft system (Triton UAS) home basing alternatives were assessed by comparing the net emissions of the Triton UAS with emissions associated with existing operations at the proposed home basing alternatives. Operational emissions evaluated reflect 2019 conditions when all aircraft and personnel arrive and operate at the installation and include: 1) aircraft and maintenance operations and 2) privately-owned vehicles (POVs) commuting to and from the installation. It was assumed that the Proposed Action would result in no net change in use of government-owned vehicles.

3.4 Biological Resources

3.4.1 Definition

Biological resources include living plant and animal species and the habitats within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

3.4.2 Regulatory Setting

Special status species are those species listed as threatened or endangered under the Endangered Species Act (ESA); species afforded federal protection under the Migratory Bird Treaty Act (MBTA); the

Bald and Golden Eagle Protection Act; other special status species, including state listed species, which are not federally listed; and other species of special concern identified by state and federal agencies.

Endangered Species Act. The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend and to conserve and recover listed species. Section 7 of the ESA requires action proponents to consult with the U.S. Fish and Wildlife Service (USFWS) or National Oceanic and Atmospheric Administration (NOAA) Fisheries to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NOAA are mainly marine wildlife such as whales and anadromous fish such as salmon. Under the ESA, species may be listed as either endangered or threatened. “Endangered” means a species is in danger of extinction throughout all or a significant portion of its range. “Threatened” means a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened (USFWS, 2016).

Bald and Golden Eagle Protection Act. Bald and golden eagles are protected by this act. It prohibits anyone, without a permit issued by the Secretary of the Interior, from taking eagles, including their parts, nests, or eggs. The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. “Disturb” means: “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (16 U.S. Code [U.S.C.] sections 668-668c).

Migratory Bird Treaty Act. Most birds are protected under the MBTA, and their conservation by federal agencies is mandated by EO 13186 (*Responsibilities of Federal Agencies to protect Migratory Birds*). Under the MBTA, it is illegal for anyone, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by regulation. Under EO 13186, each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the USFWS that shall promote the conservation of migratory bird populations.

In July 2006, the DoD and USFWS signed the MOU to promote the conservation of migratory birds. In it, specific activities were identified (e.g., Partners in Flight and INRMPs) where cooperation between the two agencies will contribute to the conservation of migratory birds and their habitats. In February 2007, 50 CFR part 21.15 authorized the take incidental to military readiness activities. It states that the Armed Forces may take migratory birds incidental to military readiness activities provided that, for those ongoing or proposed activities that the Armed Forces determine may result in a significant adverse effect on a population of a migratory bird species, the Armed Forces must confer and cooperate with the USFWS to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects. Military readiness activities, as defined in P.L. 107-314, section 315(f) in the 2003 National Defense Authorization Act, includes all training and operations of the Armed Forces that relate to combat, and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use.

3.4.3 Approach to the Analysis

Within this EA, biological resources are divided into three major categories: (1) vegetation, (2) wildlife, and (3) special status species. Wildlife includes all animal species, i.e., insects and other invertebrates, fish, amphibians, reptiles, birds, and mammals, focusing on the species and habitat features of greatest importance or interest. Vegetation includes terrestrial plant communities and constituent plant species. Special status species include federal and state listed species and other species of special concern identified by state and federal agencies.

Home basing the Triton UAS aircraft and associated on-shore construction would not directly affect marine species or habitat through construction or operations. Indirect effects such as sedimentation and erosion are not anticipated. The proposed site is located at a distance from the tidal water to preclude sedimentation and erosion. However, standard best management practices would be applied, such as silt fencing and soil stabilization, to ensure that sediments do not migrate into nearby marine areas. Therefore, marine resources are not included in this analysis.

3.5 Water Resources

3.5.1 Definition

Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs and wells. Surface water resources generally consist of wetlands, lakes, rivers, streams, and stormwater. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. A Total Maximum Daily Load (TMDL) is the maximum amount of a substance that can be assimilated by a water body without causing impairment. A water body can be deemed impaired if water quality analyses conclude that exceedances of water quality standards occur. The Clean Water Act (CWA) requires that states establish a Section 303(d) list to identify impaired waters and establish TMDLs for the sources causing the impairment.

Wetlands are jointly defined by USEPA and U.S. Army Corps of Engineers (USACE) (33 CFR section 328(b)) as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands generally include “swamps, marshes, bogs, and similar areas.”

Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters subject to recurring inundation (i.e., flooding). Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplain boundaries are most often defined in terms of frequency of inundation, typically this area is identified as being subject to a 1 percent probability of a flood exceeding a certain level. Floodplain hazard maps are produced by the Federal Emergency Management Agency; they identify flood-prone areas that will probably be inundated within a specified interval. For purposes of this analysis, the 100-year interval is used.

3.5.2 Regulatory Setting

Groundwater quality and quantity are regulated under several statutes and regulations, including the Safe Drinking Water Act. The CWA establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES) program, on the amounts of specific pollutants that can be discharged into

surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (i.e., end of pipe) and nonpoint sources (i.e., stormwater) of water pollution.

The Energy Independence and Security Act establishes stormwater design requirements for development and redevelopment projects. Under Section 438 of the act, federal facility projects larger than 5,000 square feet must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow."

Waters of the U.S. are defined as (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow perennially or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries under Section 404 of the CWA, as amended, and are regulated by USEPA and the USACE (summarized from 40 CFR section 230.3). Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other Waters of the U.S. Any discharge of dredged or fill material into Waters of the U.S. requires a permit from the USACE.

Wetlands are currently regulated by the USACE under Section 404 of the CWA as a subset of "Waters of the U.S." The term Waters of the U.S. has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats, including wetlands. Jurisdictional Waters of the U.S. regulated under the CWA include coastal and inland waters, lakes, rivers, ponds, streams, intermittent streams, and "other" waters that, if degraded or destroyed, could affect interstate commerce. The full regulatory definition of Waters of the U.S. can be found at 33 CFR section 328.3, *Definition of Waters of the United States*. EO 11990, *Protection of Wetlands,* requires that federal agencies adopt a policy to avoid, to the extent possible, long- and short-term adverse impacts associated with destruction and modification of wetlands and to avoid the direct and indirect support of new construction in wetlands whenever there is a practicable alternative. Floodplains are defined by EO 11988 as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a 1 percent or greater chance of flooding in any given year." Areas subject to a 1 percent or greater chance of annual flooding are also referred to as 100-year floodplains and areas subject to a 0.2 percent or greater chance of annual flooding are referred to as 500-year floodplains. In October 2015, EO 13690, *Establishing a Federal Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input*, was approved. It identified flood risk management standards, identifying ways to increase stakeholder involvement, and amended certain sections of EO 11988 (see Sections 1 and 2 of EO 13690). Per both EOs, federal agencies are required to avoid, to the extent practicable, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development whenever there is a practicable alternative. If impacts cannot be avoided the appropriate flood risk management strategies need to be applied to the design and construction of the building.

3.5.3 Approach to Analysis

The discussion of water resources in this EA includes groundwater, surface water, wetlands, and floodplains. Compliance with the Coastal Zone Management Act (CZMA) is addressed in Section 10.1, Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations.

3.6 Cultural Resources

3.6.1 Definition

Cultural resources are remnants of past human activity that, as a general rule, are greater than 50 years of age. Cultural resources can be present within landscapes as districts, sites (including both archaeological and historical sites), or isolated finds. Districts are groups of buildings, structures, and sites that are linked historically by function, theme, or physical development. Sites are the locations of a significant event, or of historical human occupation or activity. They are identified by the presence of artifacts or features within a given space. Sites have the capacity to yield important information about aspects of human history and cultures. Isolated finds are characterized by solitary artifacts or sparse, insignificant groupings of artifacts within a given space. Isolated finds lack the capacity to yield information important to human history and cultures.

3.6.2 Regulatory Setting

Cultural resources are governed by federal laws and regulations, including the National Historic Preservation Act (NHPA), Archeological and Historic Preservation Act, American Indian Religious Freedom Act, Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1990. Federal agencies' responsibility for protecting historic properties is defined primarily by sections 106 and 110 of the NHPA.

Section 106 of the NHPA, as implemented by 36 CFR part 229, requires federal agencies to consider the effects of their actions on historic properties before undertaking a project. Section 110 requires federal agencies to establish—in conjunction with the Secretary of the Interior—historic preservation programs for the identification, evaluation, and protection of historic properties. Cultural resources also may be covered by state, local, and territorial laws. A historic property is defined as any building, site, structure, object, or district that is included in, or eligible for inclusion in, the National Register of Historic Properties (NRHP). The NRHP is the official inventory of the nation's historic properties. The NRHP also includes National Historic Landmarks. In consideration of 36 CFR part 229, federal agencies are required to initiate consultation with the State Historic Preservation Officer (SHPO) and interested parties to define the proposed action, its potential effects on significant cultural resources, and the means to avoid, minimize, or mitigate effects on historic properties.

For the Navy the Integrated Cultural Resources Management Plan (ICRMP) provides guidance and establishes standard operating procedures for the management of historic properties on their installations in compliance with Sections 106 and 110 of the NHPA, as well as with other federal laws, and DoD and Navy instructions and policies on the management of cultural resources. NASA has entered into a Programmatic Agreement with the Virginia State Historic Preservation Office and the Advisory Council on Historic Preservation, which outlines how the WFF will manage its cultural resources. The Environmental Resources Document identifies the archaeological, architectural, and traditional cultural properties found on the WFF (NASA, 2015).

3.6.3 Approach to Analysis

The discussion of cultural resources in this EA includes prehistoric and historic archaeological sites; historic buildings, structures, and districts; and physical entities and human-made or natural features important to a culture, a subculture, or a community for traditional, religious, or other reasons. For this analysis, cultural resources are divided into three major categories:

- Archaeological resources (prehistoric and historic) are locations where human activity measurably altered the earth or left deposits of physical remains.
- Architectural resources include standing buildings, structures, landscapes, and other built-environment resources of historic or aesthetic significance.
- Traditional cultural properties may include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that American Indians or other groups consider essential for the preservation of traditional culture.

The area of potential effects (APE) for cultural resources is the geographic area or areas within which an undertaking (project, activity, program or practice) may cause changes in the character or use of any historic properties present. The APE is influenced by the scale and nature of the undertaking and may be different for various kinds of effects caused by the undertaking.

3.7 Socioeconomics

3.7.1 Definition

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity. Demographics, employment characteristics, and housing occupancy status data provide key insights into socioeconomic conditions that might be affected by a proposed action.

3.7.2 Regulatory Setting

CEQ regulations implementing the National Environmental Policy Act (NEPA) state that when economic or social effects and natural or physical environmental effects are interrelated, these effects on the human environment should be discussed (40 CFR section 1508.14). The CEQ regulations further state that the "human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment." In addition, 40 CFR section 1508.8 states that agencies need to assess not only direct effects, but also indirect effects such as "aesthetic, historic, cultural, economic, social, or health" effects.

3.7.3 Approach to Analysis

The socioeconomic analysis evaluates how elements of the human environment might be affected by the Proposed Action. Socioeconomic data shown in this section are presented at the Census County Division (CCD), county, state, and/or national levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends. Data were collected from previously published documents issued by federal, state, and local agencies and from state and national databases (e.g., U.S. Bureau of Economic Analysis' Regional Economic Information System).

3.8 Transportation

3.8.1 Definition

Ground traffic and transportation refer to roadway and street systems, the movement of vehicles on roadway networks, and mass transit. Roadway operating conditions and the adequacy of existing roadway systems to accommodate vehicle use are often described in terms of average daily traffic (ADT) volumes and Level of Service (LOS) ratings. Neither air traffic nor ship traffic is examined in this EA. The Triton UAS will operate in restricted, warning, or prohibited special use airspace upon takeoffs and landings and transiting to its cruising altitude—it can operate up to 60,000 feet above ground level (AGL). At all times the aircraft will be under the direct control of pilots. Once it gains its cruising altitude,

the Triton UAS will operate well above civil and commercial air traffic. In terms of ship traffic, the Proposed Action does not involve any maritime operations so this facet of transportation is not analyzed further.

3.8.2 Regulatory Setting

A qualitative measure is used to identify the level of flow and service of highways and roads. The measure is called the LOS. With the LOS measure, a level is assigned to roadways based on traffic flow, density, speed, and other characteristics. The letters A through F represent the LOS. An LOS of A is considered the least restricted flow of traffic; B has a reasonable free flow with only minor maneuverability restrictions in traffic flow; C has a stable flow where the ability to maneuver through lanes is restricted and lane changes require more driver awareness; D has unstable flow and the freedom to maneuver in the traffic stream is limited; E has an unstable flow and is operating at its capacity; and F is considered the most restricted flow and typical of roads with traffic jams.

3.8.3 Approach to Analysis

Transportation resources that are addressed in this EA focus on vehicle movements on the major and minor roadways that feed into the installation, security gates, and parking areas.

3.9 Hazardous Materials and Waste

3.9.1 Definition

"Hazardous materials," "hazardous waste," and "special hazards," broadly defined, can all be classified as "hazardous substances" as defined by the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 because they may present a threat to human health and/or the environment.

Hazardous materials are defined under CERCLA as chemical substances that pose a substantial hazard to human health or the environment when improperly treated, handled, used, packaged, stored, transported, or disposed. This includes ignitable, corrosive, reactive, or toxic materials. Furthermore, the U.S. Department of Transportation regulations, 49 CFR section 171.8, defines hazardous materials as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR part 173.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) as: "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed." Hazardous wastes may take the form of solid, liquid, contained gaseous, semi-solid wastes (e.g., sludges), or any combination of wastes that pose a substantial present or potential hazard to human health or the environment and have been discarded or abandoned.

Special hazards are those substances that might pose a risk to human health and addressed separately from other hazardous substances. Special hazards include asbestos-containing material, polychlorinated biphenyls, and lead-based paint. The USEPA is given authority to regulate special hazard substances by the Toxic Substances Control Act. Asbestos is also regulated by USEPA under the CAA.

The Defense Environmental Restoration Program (DERP) was established by DoD to facilitate thorough investigation and cleanup of contaminated sites on military installations (i.e., active installations, installations subject to Base Realignment and Closure, and formerly used defense sites). Equivalently, the purpose of NASA's Environmental Compliance and Restoration (ECR) Program is to clean up chemicals released to the environment from past activities.

3.9.2 Regulatory Setting

Hazardous materials are regulated under several federal programs administered by the USEPA, including CERCLA, Emergency Planning and Community Right-to-Know Act, Toxic Substances Control Act, and RCRA. Both DoD and NASA installations are required to comply with these laws along with other applicable federal, state, DoD, and NASA regulations, as well as with relevant EOs including EO 13148, *Greening the Government Through Leadership in Environmental Management*. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations.

Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR part 273. Four types of waste are currently covered under the universal wastes regulations: batteries, pesticides that are either recalled or collected in waste pesticide collection programs, thermostats, and lamps.

In terms of special hazards, the DERP and ECR programs were instituted to satisfy the requirements of CERCLA and RCRA for former and current hazardous waste sites. The Installation Restoration Program and the Military Munitions Response Program are components of the DERP. The Installation Restoration Program requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The Environmental Restoration Program is the Navy’s initiative to address DERP. For NASA, ECR Program site cleanups are prioritized to ensure that the highest priority liabilities are addressed, first to protect human health and the environment, and second to preserve natural resources for future missions. The ECR program includes both restoration and environmental management investment projects.

3.9.3 Approach to Analysis

This EA discusses hazardous materials, hazardous waste, special hazards, and DERP. The Navy and NASA have implemented strict hazardous material and waste programs for all activities. These programs are governed Navy-wide by applicable OPNAVINST and at the installation by specific instructions issued by the Base Commander, agency-wide at NASA by NASA Procedural Requirements, and at the center-level by site specific NASA Environmental Management Systems. The Navy and NASA continuously monitor their operations to find ways to minimize the use of hazardous materials and to reduce the generation of hazardous wastes.

3.10 Cumulative Impacts

3.10.1 Definition of Cumulative Impacts

The approach taken in the analysis of cumulative impacts in this EA follows the objectives of NEPA, CEQ regulations, and CEQ guidance. Cumulative impacts, defined in 40 CFR part 1508.7, are those to the environment that result from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. To determine the scope of

environmental assessments, agencies consider cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and therefore be discussed in the same impact statement.

In addition, CEQ and USEPA have published guidance addressing implementation of cumulative impact analyses—*Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* (CEQ, 2005) and *Consideration of Cumulative Impacts in EPA Review of NEPA Documents* (USEPA, 1999). CEQ guidance entitled *Considering Cumulative Impacts under NEPA* (1997) states that cumulative impact analyses should

> "…determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts…[and]…focus on truly meaningful impacts."

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

3.10.2 Scope of Cumulative Impacts Analysis

The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the time in which the effects could be expected to occur. For this EA, the study area delimits the geographic extent of the cumulative impacts analysis for each of the three action alternatives. In general, the study area includes those areas previously identified in the affected environment in Chapters 4, 6, and 8 for the respective resource areas. The period for cumulative impacts centers on the timing of the Proposed Action. For this analysis, the time encompasses 2017 when construction would begin and ends in 2023, when steady-state operations of the Triton UAS home basing action would be achieved.

Another factor influencing the scope of cumulative impacts analysis involves identifying other actions to consider. Beyond determining that the geographic scope and time frame for the actions interrelate to the action alternatives, the analysis employs the measure of "reasonably foreseeable" to include or exclude other actions. Public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include notices of intent for Environmental Impact Statements (EISs) and EAs, management plans, land use plans, and other planning related studies.

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4 Alternative 1: Naval Air Station Key West, Florida Affected Environment and Environmental Consequences

4 ALTERNATIVE 1: NAVAL AIR STATION KEY WEST, FLORIDA AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter presents a description of the environmental resources and baseline conditions that exist along with the potential environmental consequences that could occur by implementing Alternative 1 at Naval Air Station (NAS) Key West.

4.0 Scope of Impact Analysis

All potentially relevant environmental resource areas were initially considered for analysis in this Environmental Assessment (EA). In compliance with National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ), and 32 Code of Federal Regulations (CFR) part 775 requirements, the discussion of the affected environment (i.e., baseline conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

"Significantly," as used in NEPA, requires consideration of both context and intensity. Context means that the significance of an action must be analyzed using several factors such as society as a whole (e.g., human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of a proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant (40 CFR part 1508.27). Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be in order to be considered significant. Likewise, the less sensitive the context, the potential impact would need to be more intense to be significant.

The following identifies the resource areas whose impacts were considered negligible or non-existent; therefore, they were not analyzed in detail for Alternative 1 at NAS Key West. These resources are airfield and airspace management, land use, infrastructure and utilities, recreation, community/ emergency services, cultural resources, environmental justice, visual/aesthetic resources, and soils and topography.

Airfield and Airspace Management: Construction activities associated with this alternative would occur adjacent to one of the three runways (Figure 4-1); however, these activities would not conflict or restrict existing airfield operations. Construction and equipment would use existing roads to access the project site and the location of construction would not take place on the runways. The addition of approximately five Triton unmanned aircraft systems (UAS) flight operations per day would equate to a maximum of 1,825 aircraft operations annually (based on 365 flying days), which would represent an approximate 3.5 percent increase for existing annual operations at Boca Chica Airfield. Currently, this airfield supports more than 52,000 flight operations (i.e., takeoffs, landings, and touch-and-goes) annually. A 3.5-percent increase would not impair the ability of the Radar Air Traffic Control Facility to coordinate flights within airfield environment or in the adjacent controlled airspace. Triton UAS aircraft would be under pilot control at all times and with adherence to existing flight rules, and continued coordination with Key West's International Airport Air Traffic Control, would preclude conflicts with local air traffic.

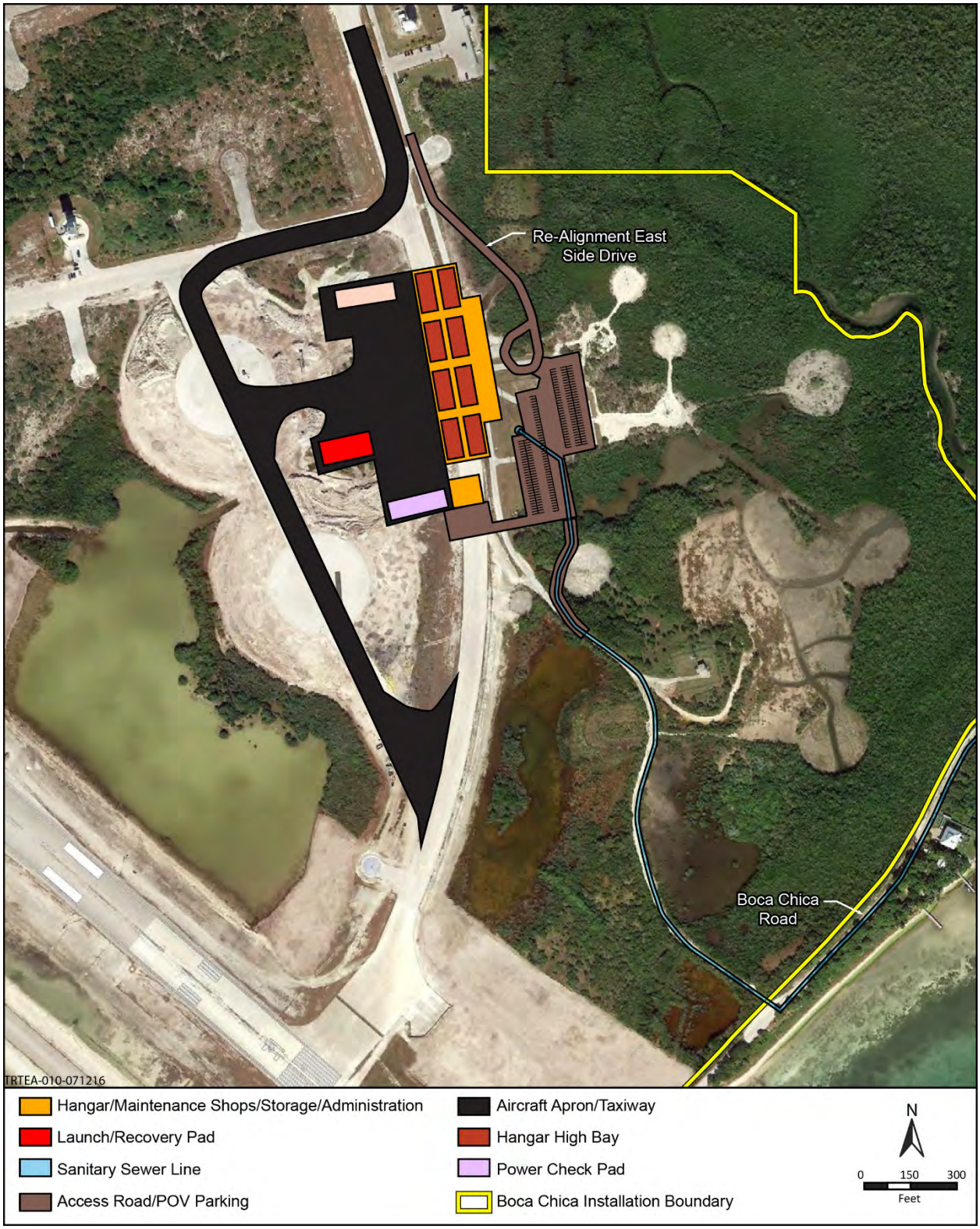


Figure 4-1 Naval Air Station Key West Proposed Construction

Alternative 1 would not involve the creation or modification of any special use airspace. Triton UAS flight operations would be conducted in existing controlled airspace around the Boca Chica Airfield and upon departure, fly within restricted airspace, travel over water, and climb to a final cruise altitude of approximately 58,000 feet above mean sea level. The Navy would obtain the appropriate Federal Aviation Administration (FAA) certification before Triton UAS flight operations would be conducted at the air station. Therefore, no impacts to airfield or airspace management would be expected and no further analysis of this resource is carried forward under Alternative 1 at NAS Key West.

Land Use: The proposed construction site is located on Boca Chica Airfield and primary land uses comprise three runways. The associated safety clear zones include large expanses of mowed apron areas, open water lagoons, and wetland habitats, some of which support federally protected species (e.g., Lower Keys marsh rabbit and American crocodile) (see Figure 4-1). The area located to the north of the runway includes air operations buildings, transient housing, administrative buildings and recreational facilities. In addition to airfield operations, Boca Chica contains a weapons area to the west-southwest of the airfield. This area contains a few buildings but is primarily undeveloped because it is encumbered by safety requirements for explosive ordnance handling activities (i.e., Explosive Safety Quantity Distance arcs). The Boca Chica Marina is located on the western side of the Key and includes a recreational beach, boat slips, and a mooring area (United States [U.S.] Navy, 2014a). There would be no changes to land use designations within the air station's boundaries either due to construction or operations. Outside of station boundaries, neither construction nor operations would affect land use designations (i.e., construction would not affect areas off station and projected noise levels would not change from existing conditions). Therefore, no impacts to land uses would be expected and no further analysis of this resource is carried forward under Alternative 1 at NAS Key West.

Infrastructure and Utilities: Over the past decade, NAS Key West has experienced a decrease in station personnel and operations, and the Key West population has shrunk by close to 4 percent since 2010 (U.S. Census American FactFinder, 2016). Subsequently, there is excess capacity of infrastructure and utilities at the station and in the greater community because the existing infrastructure (including utilities such as potable water, electricity, and communications, as well as public services such as wastewater treatment and garbage collection) was originally designed to support a larger population. However, a new sanitary sewer line would need to be installed to accommodate the increase of personnel in that part of the installation. The lift station would be situated in the proposed parking area, follow an existing road for close to a half mile to Boca Chica Road, and then follow this road for about a mile to the municipal lift station on Boundary Lane at Geiger Key. The Florida Keys Aqueduct Authority would be responsible for the operation and maintenance of the off-installation wastewater system. As of January 2010, Geiger Key joined the Big Coppitt Central Wastewater System, a new system that completed construction in 2009. There is existing capacity, therefore, in the Authority's wastewater system to support this addition. In summary, Alternative 1 is not expected to exceed the current capacity of the infrastructure and utilities at NAS Key West and in the greater Lower Keys area. Therefore, only negligible impacts to infrastructure or utilities would be expected and no further analysis is carried forward.

Recreation: There are no recreational resources located at or adjacent to the proposed construction site at NAS Key West. Furthermore, this alternative would not involve any activities that would alter existing recreational areas (e.g., the Marina) or impact recreational activities at or adjacent to the air station. Triton UAS-generated noise levels would increase no more than 1 decibel (dB) Day-Night Average Sound Level (DNL), therefore, the acoustic environment would not be perceptibly different than existing

conditions if Alternative 1 were implemented. No impacts, therefore, would be expected to recreational resources and detailed examination is not carried forward for this resource under Alternative 1 at NAS Key West.

Community/Emergency Services: *Educational Services.* Monroe County supports 20 public education institutions. It is estimated that Alternative 1, NAS Key West, would add 184 more school-aged children to the Monroe County School District (Department of Defense [DoD], 2014). This would represent a 4.2-percent increase in the school district's 2016 enrollment of 4,382. According to the Monroe County School District 2014-2015 Work Plan, the two elementary schools had a utilization rate averaging 88 percent in 2014/2015, and it is projected that this utilization rate would remain similar in the 2018/2019 timeframe. The addition of 130 students could introduce impacts to a local elementary school if all personnel lived on the station; however, as this would not be the case, it is anticipated that the additional students would not introduce significant effects to area elementary schools. As for the middle school, the 2014/2015 utilization rate was 86 percent and is projected to be 82 percent by 2018/2019 (Monroe County School District, 2016). The middle school has the capacity to support the anticipated 22 additional students under Alternative 1. The high school had a 2014/2015 utilization rate of 81 percent, with a projected utilization rate of 77 percent by 2018/2019. The high school has the capacity to accommodate 33 additional students anticipated under Alternative 1. Therefore, only negligible impacts would be expected to educational services.

Health Services. There are several civilian hospitals in the Key West area: Lower Florida Keys Medical Center, the Fishermen's Community Hospital, and the Nicklaus Children's Hospital. The Naval Branch Medical Clinic has two primary outpatient facilities on NAS Key West, one on Boca Chica Airfield and one in the city of Key West. The medical clinic at Boca Chica Airfield serves active duty personnel. At the main branch in downtown Key West, active duty personnel, their dependents, and veterans receive care. Services provided include primary care, pediatrics, minor surgery, and optometry. There is existing capacity in both civilian and naval facilities to support the anticipated increase in population associated with Alternative 1 at NAS Key West; therefore, negligible impacts are anticipated to health services.

Emergency Services. Fire protection for NAS Key West is located on Boca Chica Airfield and Trumbo Annex. In addition to the Navy facilities, the city of Key West has 89 total firefighting personnel in 2015 (Key West, 2015). The city of Key West also has 127 police department personnel. Under Alternative 1, NAS Key West, an estimated 914 military, civil service personnel, and their dependents would move to the Key West and Lower Keys area. This represents about a 2.8-percent increase in the Key West area population, and a 7.9-percent increase in the Lower Keys population. This negligible addition would not constrain the ability of the Key West fire and police to respond to emergencies; their current response time is 4 minutes and would not be affected by this negligible population increase. In the event that a hurricane evacuation was required, personnel and their dependents would operate under existing plans and procedures to ensure their safety. Triton UAS and other aircraft would be flown to a safe location outside of the hurricane's path. Therefore, only negligible impacts are anticipated to emergency response times and services.

Accordingly, community/emergency services for Alternative 1 at NAS Key West are not carried forward for detailed examination.

Cultural Resources: Cultural resources-related investigations conducted at NAS Key West have resulted in the recordation of 16 archaeological sites (NAS Key West, 2014). Three sites are eligible for listing in the National Register of Historic Places (NRHP); however, none is located within the Area of Potential

Effects (APE) of Alternative 1. Architectural surveys were conducted at NAS Key West facilities in 1989 and three different times in the 1990s to determine the presence of NRHP-eligible architectural resources. Seventeen architectural resources at NAS Key West have been determined eligible for inclusion in the NRHP (NAS Key West, 2014). However, no NRHP-listed properties are located within the APE at Boca Chica Airfield. On June 30, 2016, the Navy requested concurrence from the Florida State Historic Preservation Office with their determination of "No Historic Properties Affected". The letter is included in Appendix B.

No traditional cultural properties have been identified associated with the Boca Chica Airfield. During development of the NAS Key West Integrated Cultural Resources Management Plan, consultation with the Miccosukee Tribe of Indians of Florida was completed by the Navy. The tribal representatives identified potential Native American cultural materials located on Boca Chica Key, but did not indicate the possibility of a traditional cultural property (NAS Key West, 2014). Letters notifying the Tribes of the Proposed Action were sent July 29, 2016; emails were also sent on August 1, 2016, apprising the Tribes of the Navy's proposed undertaking.

Accordingly, no further analysis of cultural resources is conducted for Alternative 1 at NAS Key West.

Environmental Justice: Construction and demolition activities associated with Alternative 1 would occur within Boca Chica Airfield or on existing right of ways. Noise, safety, and health conditions affecting low-income and minority populations, as well as the elderly and children would not change perceptibly from those currently found at and around the air station. Additionally, noise levels generated by the Triton UAS would not perceptibly change from existing conditions. This alternative would not involve any activities (e.g., noise, air emissions, health, or safety hazards) that would disproportionately affect minority or low-income populations, children, or the elderly (per Executive Order [EO] 12898, *Environmental Justice for Low Income and Minority Populations* and EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*). Therefore, environmental justice for Alternative 1 at NAS Key West is not carried forward for detailed examination.

Visual/Aesthetic Resources: Visually, construction and demolition activities associated with this alternative would result in facilities that would be consistent with the current characteristic features of a military airfield and landscape of the air station. Additionally, there are no historic buildings found adjacent to the proposed construction site to create aesthetic conflicts. The design of new structures would adhere to Navy building guidelines and standards. Once operational, the introduction of Triton UAS aircraft would not change the visual aspect or aesthetic values at an already active military airfield. Therefore, no impacts to visual or aesthetic resources would be expected and this resource category, for Alternative 1 at NAS Key West, is not carried forward for detailed examination.

Soils and Topography: According to the NAS Key West Integrated Natural Resources Management Plan, soils in the Key West area belong to the Rock Island or Urban Land Association (U.S. Navy, 2014a). These soils have been created as a result of dredge and fill activities or have accumulated because of the physical and chemical weathering of the parent oolitic limestone. The soils consist of sand, shell, and limestone fragments mixed with small amounts of marine sediments. These unconsolidated soils are very permeable and despite the flat topography, drainage is good. Implementing best management practices to stabilize soils and control sedimentation during construction and demolition activities would minimize potential impacts from erosion and sedimentation into receiving water bodies. No prime farmland soils are mapped at the site, and no in-water construction would occur to produce marine sediments. Construction and demolition activities associated with this alternative would not significantly

alter the soils and topographic features of the air station. Accordingly, soils and topography for Alternative 1 at NAS Key West are not carried forward for detailed examination.

4.1 Noise

This section discusses the existing ambient sound environment within and around Boca Chica Airfield (i.e., the affected environment) and the potential impacts home basing the Triton UAS would have on this environment. Refer to Section 3.1 for the resource definition and approach to analysis. Noise in relation to natural resources, including wildlife, is discussed in Section 4.4.

4.1.1 Affected Environment

The affected environment includes those areas and receptors exposed to noise generated at Boca Chica Airfield. The ambient sound environment includes natural sources (e.g., wind, waves, and birds) and human-generated sources (e.g., aircraft, vehicles, boats, and horns). Flight operations are the primary source of noise generated at the airfield. Existing conditions comprise those presented in the NAS Key West Airfield Operations Environmental Impact Statement, Alternative 2 (U.S. Navy, 2013a), are incorporated by reference, and include 52,000 annual airfield operations. These operational numbers include existing and anticipated future operations at the air station. Aircraft conducting flight operations at the air station in recent decades have been dominated by the FA-18s and F-5Ns, as well as transient F-15s and F-16s (U.S. Navy, 2013a). Additionally, engine maintenance run-ups are significant contributors to the noise environment; these are conducted at the south end of Runways 14/32 and 4/22 (U.S. Navy, 2013a).

Table 4-1 presents the Sound Exposure Level (SEL) of commonly operated aircraft at the airfield. The SEL measurement assumed the aircraft are directly over the receptor and presented at varying altitudes. The SEL provides the best representation of what people generally and immediately respond to when an aircraft flyover occurs. As indicated, the F/A-18s generate SEL of about 115.8 to 116.9 dBs at an altitude of 1,000 feet above ground level (AGL), the probable altitude of the aircraft when it passes outside of the station's boundaries. The SELs for transient aircraft at that same altitude range from about 118.6 for the F-22 to 94.1 dB for the P-3. In comparison, the Triton UAS creates an SEL of 82.7 at 1,000 feet AGL.

Table 4-1 Representative Sound Exposure Level for Common Aircraft Departures at Naval Air Station Key West

Aircraft[1]	*In dBs*		
	500 feet AGL	*1,000 feet AGL*	*2,000 feet AGL*
F/A-18C/D[2]	122.9	116.9	110.5
F/A-18E/F[2]	121.3	115.8	107.9
P-8[3]	115.5	110.5	105.0
P-3	99.5	94.1	88.4
F-35C[2]	122	116.0	110.0
F-22	124	118.6	112.6
F-5	116.1	110.1	103.2
Triton UAS[4]	87.5	82.7	76.7

Source: SELCalc2 (U.S. Air Force, 2002).
Notes: [1]All aircraft modeled as departures in takeoff power engine setting.
[2]U.S. Navy, 2013a.
[3]Modeled using Boeing 737-D9 (same engines).
[4]Modeled using a Cessna Citation X, which has the same basic Rolls-Royce AE 3007 engine as the Triton UAS. While the Triton UAS has a single engine, the Citation X has two engines. Therefore, the SEL for the Citation X is approximately 3 dB greater than the Triton UAS, but should share a similar frequency spectrum, making for a conservative surrogate.

4.1.2 Environmental Consequences

Analysis of potential noise impacts includes estimating likely noise levels from Alternative 1 and determining potential effects to the human and natural environment.

NAS Key West Potential Noise Impacts:

- The No Action Alternative would not change the existing noise environment at NAS Key West.
- Alternative 1: Construction noise would be short-term and would not affect areas outside of air station boundaries.
- Alternative 1: A less than 1 dB DNL increase in noise levels from Triton UAS operations would likely not be noticeable; therefore, negligible impacts to the acoustic environment.

4.1.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to existing noise levels. Therefore, no changes to the noise environment would occur with implementation of the No Action Alternative.

4.1.2.2 Alternative 1: Naval Air Station Key West, Florida

The affected environment for Alternative 1 includes those areas and receptors exposed to construction- and aircraft-generated noise at Boca Chica Airfield.

Construction Noise

Construction noise is generated by the use of heavy equipment on job sites and is generally short-term in duration (i.e., during specific times in the day and certain phases of renovation, demolition, and/or construction). Commonly, heavy equipment operation occurs sporadically throughout daytime hours. Table 4-2 provides a list of representative construction equipment and associated noise levels in dBs, adjusted for the percent of time the equipment would typically be operated at full power at a construction site, from a distance of 50 feet. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment, which are typically impact devices (e.g., jackhammers). Under Alternative 1 at NAS Key West, noise impacts would vary based on the construction phase and by the specific task being undertaken (U.S. Environmental Protection Agency [USEPA], 1971). For instance, demolition and construction activities typically involve bulldozers and jack hammers; bulldozers, scrapers, backhoes, and trucks are used during excavation, land clearing, and grading; backhoes are

involved in utility installation; and concrete mixers, pumps, saws, hammers, cranes, and forklifts are employed during building construction.

Table 4-2 Predicted Noise Levels for Construction Equipment

Equipment Description	*Actual Measured Maximum Sound Level (dB) at 50 feet*
Clearing and Grading	
Flat Bed Truck	74
Dump Truck	76
Roller	80
Bulldozer	82
Grader/Scraper	84
Excavation	
Front End Loader	79
Pneumatic Tools	85
Jackhammer	89
Building Construction	
Compressor (air)	78
Concrete Mixer Truck	79
Crane/Generator/Pump	81
Warning Horn	83
Chain Saw	84
Vibrating Hopper	87
Concrete Saw/Impact Hammer	90

Source: Federal Highway Administration [FHWA], 2006.

Typically, the dB level of a sound decreases (or attenuates) exponentially as the distance from the source increases. For a single point source, like a bulldozer, the sound level decreases by approximately 6 dB for each doubling of distance from the source where no other features such as vegetation, topography, or walls absorb or deflect the sound. For example, at 50 feet a bulldozer generates a noise level of 82 dB, at 500 feet this level would decrease to about 54 dB and generate noise levels that would not likely be distinguishable within the acoustic environment. Additionally, building walls can attenuate noise levels by 35 to 50 dB and windows from 25 to 35 dB (FHWA, 2011).

The nearest receptor outside of station boundaries likely to be affected by construction noise is the Boca Chica Road Housing Cluster at Atlantic Drive. This housing cluster is about 4,000 feet from the proposed construction site. Given this distance, the noise generated by a bulldozer would not be perceptible to individuals around or inside their homes dB. Therefore, no significant impacts are anticipated from construction-related noise if Alternative 1 at NAS Key West were implemented.

Operations Noise

The addition of approximately five Triton UAS flight operations per day would equate to 1,825 annual flight operations, which would represent a 3.5 percent increase in existing annual operations at Boca Chica Airfield. This percent increase would change noise levels by less than 1 dB DNL. As presented in Section 3.1.1, a change of 3 dB is barely noticeable to the human ear (Berendt et al., 1976); therefore, a less than 1-dB increase in DNL would likely not be noticeable. Additionally, existing fighter jet aircraft operating out of NAS Key West would continue to dominate the noise environment at the airfield. A comparison of noise generated by the Triton UAS on departure (see Table 4-1) indicates that the Triton UAS would be approximately 33 dB quieter than the F/A-18E/Fs.

Potential impacts to the noise environment from Triton UAS flight operations would be negligible, as the Triton UAS would spend relatively little time operating in the airfield environment. The Triton UAS would conduct straight-in approaches and straight-out departures, would not include low-approaches or touch-and-go maneuvers, and would primarily depart and arrive over the ocean. The Triton UAS flight operations would not include low-approaches or touch-and-go maneuvers, which are common with fixed-wing aircraft types. Therefore, implementing Alternative 1 at NAS Key West would result in negligible impacts to the Boca Chica Airfield noise environment.

4.2 Public Health and Safety

As identified in Section 3.2.3, public health and safety in this EA addresses flight safety or aircraft mishaps, bird/wildlife aircraft strike hazards (BASH), as well as accident potential zones (APZs). Weapons and construction safety are not addressed because no weapons are associated with the Proposed Action to home base Triton UASs on the East Coast and construction activities would be compliant with all relevant occupational health and safety and anti-terrorism/force protection requirements.

4.2.1 Affected Environment

The affected environment for public health and safety includes the three main operable runways at Boca Chica Airfield and the adjacent airspace.

4.2.1.1 Aircraft Mishaps

Aircraft mishaps could be caused by mid-air collisions with other aircraft or objects, weather difficulties, mechanical failures, pilot error, or BASH. This analysis occurs in the context of two primary ongoing programs that address airfield safety:

- The Navy and DoD Air Installations Compatible Use Zones (AICUZ) program aims to protect the health, safety, and welfare of individuals living near a military airfield while preserving the operational capability of the airfield.
- Specific safety requirements of aircraft flight operations from Boca Chica Airfield are contained in the NAS Key West Air Operations Manual, including detailed standard operating procedures that must be followed by all aircrews operating from the airfield to ensure flight safety (NAS Key West, 2004).

In the unlikely event of an aircraft emergency or mishap, NAS Key West maintains emergency and mishap response plans to guide responses to an aircraft incident (to include its own search and rescue plan), should one occur. These plans assign agency responsibilities and prescribe functional activities necessary to react to mishaps, whether on or off the station. Response would normally occur in two phases. The initial response focuses on rescue, evacuation, fire suppression, safety, elimination of explosive devices, ensuring security of the area, and other actions immediately necessary to prevent loss of life or further property damage. The second phase is the mishap investigation, which involves an array of organizations whose participation would be governed by the circumstances associated with the mishap and actions required to be performed.

4.2.1.2 Accident Potential Zones

Although the likelihood of an aircraft mishap is remote, the Navy identifies APZs to assist in land use planning. These zones are not predictors of accidents; however, if an aircraft mishap were to occur, there is expected to be a higher probability of occurrence of the mishap within an APZ. These zones are delineated based on historical data and departure, arrival, and pattern flight tracks on and near airfield

runways. Boca Chica Airfield has three APZs: the Clear Zone, APZ I, and APZ II. The Clear Zone is the area where a mishap is most likely to occur, if one was to occur. APZ I delineates an area where mishaps are less likely to occur when compared to the Clear Zone. APZ II identifies an area where mishaps are even less likely to occur when compared to APZ I.

4.2.1.3 Bird/Animal Aircraft Strike Hazard

NAS Key West has an effective BASH program that involves the distribution of information and active and passive measures to control how birds use the critical areas around the airfield. Methods outlined in the plan to reduce BASH risk at the airfield include habitat management, bird dispersal, depredation, and bird avoidance (NAS Key West, 2002). The NAS Key West Operations Department Safety Officer executes the BASH Program at NAS Key West but success also depends on participation of the entire Bird Hazard Working Group that includes input from tenant commands, natural resources, and Air Traffic Control to execute effective coordination procedures and avoidance techniques such as the posting of Bird Watch Conditions for aircrews at Base Operations. In addition, NAS Key West uses the resources of the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service's Wildlife Services Program to minimize the risk posed by birds and other wildlife at the air station. Risk minimizations used by USDA personnel include non-lethal and lethal control (if deemed necessary) of hazardous wildlife, as well as the capture and relocation of wildlife from airfield boundaries under appropriate federal and state permits.

The presence of resident and migratory birds and their habitat at and near Boca Chica Airfield creates BASH risks. In Fiscal Year (FY) 2009, there were six confirmed bird strikes; in FY 2010, there were eight; and from October 2010 through June 2011 there were six confirmed bird strikes at the airfield. These levels are comparable with the historic seven to ten bird strikes per year reported for NAS Key West. No Class A damage and/or casualties (see Table 3-1 for definition) were reported with these incidents. Outside of birds, other wildlife strikes are not an issue at the airfield (U.S. Navy, 2013a).

4.2.1.4 Hurricanes

Hurricane season begins June 1 and runs through November 30. Tropical Cyclone Conditions of Readiness are ordered by the NAS Key West Commanding Officer based on the expected onset of destructive winds. The level of preparation increases with the progression of each Condition of Readiness, from picking up loose gear in Condition of Readiness 5, to reporting to shelters in Condition of Readiness 1. Aircraft are relocated to other airfields as conditions warrant and personnel emergency responses range from sheltering in place to evacuating to an out-of-area location.

4.2.2 Environmental Consequences

Public health and safety analysis addresses issues related to the health and safety of military personnel and civilians living on or near the airfield. Specifically, this section provides information on hazards associated with potential Triton UAS aircraft mishaps, APZs, and BASH. Please note, however, that there is no generally recognized threshold for air safety, which defines acceptable or unacceptable conditions. Therefore, the focus of airfield and airspace managers is to reduce safety risks through a number of measures, including providing and disseminating information to airfield/airspace users, requiring appropriate levels of training for those using the airfield/airspace, setting appropriate standards for equipment performance and maintenance, defining rules governing the use of the airfield/airspace, and assigning appropriate and well-defined responsibilities to Air Traffic Controllers, airspace managers, and pilots. When these measures are implemented, safety risks are minimized, even though they cannot be completely eliminated.

NAS Key West Potential Public Health and Safety Impacts:

- The No Action Alternative would not change existing conditions for public health and safety environment at NAS Key West.
- Alternative 1: No measurable changes to mishap risk would occur at the airfield.
- Alternative 1: The 3.5 percent increase in aircraft operations would not necessitate changes to existing APZ boundaries.
- Alternative 1: Implementation of existing BASH avoidance procedures would minimize BASH risks to negligible levels.

Weapons and construction safety are not addressed in this analysis. No weapons are associated with the Proposed Action and construction/demolition activities would be compliant with all relevant occupational health and safety and anti-terrorism/force protection requirements.

4.2.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to public health and safety. The FAA will continue to be responsible for ensuring safe and efficient use of federal airspace by military and civilian aircraft. To fulfill these requirements, the FAA has established safety regulations, airspace management guidelines, a civil/military common system, and cooperative activities with the DoD. There would be continued adherence to aircraft mishap and BASH avoidance measures as well as airfield operation rules under the No Action Alternative. Therefore, no public health or safety impacts are anticipated by implementing the No Action Alternative.

4.2.2.2 Alternative 1: Naval Air Station Key West, Florida

All Triton UAS flight operations would be conducted in accordance with FAA regulations and directives, specific operating manuals, and DoD Flight Information Publications. All emergencies or malfunctions associated with flight operations would be handled in accordance with established aircraft-specific procedures. In addition, existing standard operating procedures at NAS Key West would be employed to ensure appropriate airspace management by all participating aircraft, which would reduce the potential for mid-air collisions. Existing emergency response plans would be updated as necessary to account for any specific requirements of the Triton UAS.

Aircraft Mishaps

Implementing Alternative 1 would not measurably affect mishap risks at NAS Key West. Currently, the Boca Chica Airfield supports an annual average of 52,000 flight operations (i.e., takeoffs, landings, and touch-and-goes). The addition of approximately five Triton UAS flight operations per day would equate

to a maximum of 1,825 aircraft annual operations (based on 365 flying days). This would increase the total number of annual operations at Boca Chica Airfield by 3.5 percent. This negligible increase in operations would not be expected to increase the risk of mishaps.

Additionally, Triton UAS pilots receive extensive training prior to controlling actual aircraft flights. This includes extensive practice of emergency procedures to minimize the potential for aircraft mishaps. The Triton UAS is also designed with multiple redundant safety systems and is programmed to perform predetermined maneuvers should communication with the aircraft be interrupted. These maneuvers could include programmed flight parameters such as flying to a predetermined location and circling at a prescribed altitude until communication is restored. These maneuvers minimize the risk of mishaps. Therefore, no significant impacts to safety from aircraft mishaps or mishap responses would be expected under Alternative 1.

Accident Potential Zones

Alternative 1 would have no effect on the existing APZs at Boca Chica Airfield. The runways are compliant with all airfield safety and planning criteria and the new airframe would not require runway length or orientation to be reconfigured to retain optimal safety and efficiency of the airfield. Likewise, the APZs are based on predominant flight paths and these would not change by home basing Triton UASs at NAS Key West. No new on-base activities or construction would occur in the current APZs due to this action. Risks to persons and activities in the APZs would not change. The Navy would continue to work with Monroe County to address compatible use of privately owned land within APZ I in the northwest portion of Boca Chica Key (at the west end of runway 08/26) and APZs I and II (at the east end of runway 08/26) on Geiger Key. If Alternative 1 at NAS Key West were implemented, there would be no impacts to APZs.

Bird/Animal Aircraft Strike Hazard

Under Alternative 1, the number of flight operations is not expected to differ noticeably from existing conditions. NAS Key West has a BASH Plan (a component of the Integrated Natural Resources Management Plan [INRMP]) that is designed to minimize the occurrence of BASH and adherence to the plan would continue under Alternative 1. Procedures are in place to identify increased risks and provide decision aids to aircrews in judging whether to alter or discontinue flying operations as necessary, as identified in the Naval Air Facility Key West Instruction 3751.1B, *Bird/Animal Aircraft Strike Hazard (BASH) Reduction Program* (NAS Key West, 2002). For instance, Air Traffic Control issues bird hazard warnings whenever bird activities are observed and Flight Planning is notified and current conditions are posted at Base Operations so that all aircrews are aware of potential BASH issues at the airfield. The risk of BASH incidents is not expected to change substantially because all Triton UAS aircrews would continue to follow applicable procedures outlined in the air station BASH Plan and Program, and Triton UAS pilots would adhere to existing standard operating procedures for flight. The number of flight operations would also remain similar to existing conditions and therefore, no significant BASH impacts would be anticipated if Alternative 1 were implemented.

Hurricanes

Under Alternative 1, there would be no changes in the safety procedures undertaken in response to hurricanes. If there is a Tropical Cyclone Conditions of Readiness, Triton UAS operations would be either diverted to another location or discontinued in advance of an approaching storm. The additional personnel associated with Alternative 1 would continue adhering to existing emergency plans and procedures and not affect the community's hurricane evacuation preparedness.

4.3 Air Quality

A region's air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions (see Section 3.3 for the resource definition, regulatory setting, and approach to analysis). Most air pollutants originate from human-made sources, including mobile sources (e.g., airplanes, cars, trucks, buses) and stationary sources (e.g., factories, refineries, power plants), as well as indoor sources (e.g., some building materials and cleaning solvents). Air pollutants are also released from natural sources such as forest fires and volcanic eruptions.

4.3.1 Affected Environment

The affected environment for the air quality analysis at NAS Key West includes the Southeast Florida Air Quality Control Region (AQCR), which comprises Broward, Dade, Indian River, Martin, Monroe, Okeechobee, Palm Beach, and St. Lucie Counties. However, the air quality analysis focuses on the city of Key West and Monroe County for local impacts. The Florida Department of Environmental Protection (FDEP) is responsible for implementing and enforcing state and federal air quality regulations in Florida and has adapted the National Ambient Air Quality Standards (NAAQS) presented in Table 3-2. Monroe County is classified by the USEPA as unclassified/attainment for all criteria pollutants. Therefore, a General Conformity evaluation is not required for federal actions in this county.

The most recent emissions inventory for Monroe County and NAS Key West are shown in Table 4-4. Volatile organic compounds (VOCs) and nitrogen oxide (NO_x) emissions are used because they are precursor pollutants of ozone. Please note that the 2011 county data are the most recent from the USEPA, National Emissions Inventory, version 2 (USEPA, 2016a).

Table 4-4 Baseline Annual Air Pollutant Emissions from Airfield Operations at Naval Air Station Key West Compared to Monroe County

Emission Source	*Air Pollutant Emissions (Tons/Year)*					
	VOCs	*CO*	*NO_x*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
Monroe County	48,229.59	64,532.69	8,350.73	1,069.75	4,414.81	1,852.33
Boca Chica Airfield	177	958	228	42	95	92
Percent Contribution of Operational Emissions in Monroe County	*0.367*	*1.485*	*2.730*	*3.926*	*2.152*	*4.967*

Sources: USEPA, 2016a; U.S. Navy, 2013a.
Legend: CO=carbon monoxide; SO_2=sulfur dioxide; and PM_{10} and $PM_{2.5}$=Particulate Matter 10 or 2.5 in size.

Climate Change

In terms of greenhouse gases (GHG) (see section 3.3.2.4 for definition and description), carbon dioxide equivalent (CO_2e) mobile and stationary emissions in Monroe County were inventoried at 1,853,703 metric tons in 2010 (Monroe County, 2012). In the southeast, climate change is causing warmer temperatures, sea level rise, and increased incidents of seawater flooding to coastal communities (USEPA, 2016c). In fact, the National Oceanic and Atmospheric Administration (NOAA) has estimated that sea levels will rise a minimum of 8 inches to a maximum of 6 feet by the year 2100 (NOAA, 2012). Additionally, sea level rise is expected to contribute to increased hurricane activity and storm surge, which in turn increases the salinity of estuaries, coastal wetlands, tidal rivers, and swamps (USEPA, 2016c).

In response, Palm Beach, Broward, Miami-Dade, and Monroe Counties, as well as their municipalities and partners have joined together and developed the Southeast Florida Regional Climate Action Plan (Southeast Florida Regional Climate Change Compact Counties, 2010). This plan identifies how the region will work together to reduce GHG emissions across an area already identified as one of the most vulnerable to sea level rise in the country. The plan provides a framework for sustainable communities and transportation planning; identifies measures to protect and address the water supply and regional infrastructure, as well as ways to protect the natural systems and agricultural resources (Southeast Florida Regional Climate Change Compact Counties, 2010). Just a few of the recommendations to meet these objectives include working with appropriate local, regional, and state authorities to revise building codes and land development regulations to discourage new development or post-disaster redevelopment in vulnerable areas to reduce future risk and economic losses associated with sea-level rise; convert underutilized or unused properties and structures, including properties in financial distress, into community gardens or farmers' markets; and completing, expanding, and connecting bicycle and pedestrian networks and facilities (Southeast Florida Regional Climate Change Compact Counties, 2012).

4.3.2 Environmental Consequences

Effects on air quality are based on estimated direct and indirect emissions associated with the alternatives. Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations. The study area for air quality impacts is Monroe County.

NAS Key West Air Quality Potential Impacts:

- The No Action Alternative would not create any changes to regional air quality.
- Alternative 1: Construction would introduce short-term increases in criteria pollutant emissions. However, these emissions would not change the regional attainment status.
- Alternative 1: Mobile source emissions generated by the 2.8 percent increase in population and Triton UAS operations would introduce negligible increases in criteria pollutant emissions. However, these long-term effects would not change the regional air quality attainment status.
- Alternative 1: About 740 metric tons of GHG emissions would be introduced from Triton UAS and commuters; however, this alone would not cause global warming that could lead to climate change.

4.3.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to air quality conditions. Therefore, regional air quality would remain consistent with existing conditions and no significant impacts are anticipated by implementing the No Action Alternative.

4.3.2.2 Alternative 1: Naval Air Station Key West, Florida

Under Alternative 1, construction would include operations of equipment, vehicles, and workers. For purposes of this analysis, a conservative estimate of emissions was undertaken for equal comparison of all action alternatives. Please refer to Section 3.3.3 for details of what and how emissions were identified. Anticipated air emissions from construction, demolition, renovation, and operations would represent a negligible percentage of the air emissions inventoried locally in Monroe County and within the AQCR (Table 4-5). Construction emissions associated with Alternative 1 are well below the current NAS Key West emissions, which themselves represent a small fraction of the emissions generated in Monroe County. Appendix C contains the emissions calculations used for this analysis. Emissions associated with construction and demolition activities would be temporary in nature, and appropriate

fugitive dust-control measures (e.g., watering soils, replanting with vegetation) would be employed to minimize construction emissions to the greatest extent possible.

Anticipated emissions associated with the additional personnel commuting to and from NAS Key West and Triton UAS flight operations, as presented in Table 4-5, would annually contribute less than 1 percent of regional emissions for any criteria pollutant. These increases would not cause or contribute to a violation of any NAAQS, increase the frequency or severity of a violation of any ambient air quality standard, or expose populations to substantially increased pollutant concentrations. JP-5 is a kerosene-based jet propellant that is currently used at NAS Key West. Proper procedures for the storage and transfer of the fuel to reduce the potential for impact to air quality during fuel and defuel activities would continue to be followed. Therefore, no significant impacts to local or regional air quality would be expected from implementing Alternative 1 at NAS Key West.

Table 4-5 Projected Air Emissions Generated by Alternative 1, Naval Air Station Key West

Location	***Air Pollutant Emissions (Tons/Year)[1]***						
	VOCs	*CO*	*NO_x*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e* (in metric tons)
Construction Emissions (2018)[2]	0.56	2.58	7.35	0.09	39.70	4.32	602
Projected Operational Emissions (2019 and onwards)[2]							
Triton Operations, Maintenance, and Ground Support Equipment	0.16	1.12	0.86	0.12	0.02	0.02	0.29
Commuting Emissions	0.22	13.33	1.26	0.01	0.09	0.08	739.33
Annual Total Projected Operational Emissions	***0.38***	***14.45***	***2.13***	***0.14***	***0.11***	***0.10***	***739.62***
Percent Contribution of Operational Emissions in Monroe County	*0.0008%*	*0.022%*	*0.025%*	*0.012%*	*0.002%*	*0.005%*	*0.04%*

Notes: [1]Numbers may not add up due to rounding.
[2]Appendix C provides the calculation details for emissions.

Climate Change

Depending on future GHG emissions and how the climate responds, average global temperatures are projected to increase worldwide by 0.5 to 8.6 degrees Fahrenheit by 2100, with a likely increase of at least 2.0 degrees Fahrenheit (USEPA, 2016b). For Florida, the U.S. Global Change Research Program anticipates that the state will experience a hotter and wetter climate, and that decreased water availability will be exacerbated by population growth and land-use change, and thus continue to increase competition for water and affect the region's economy and unique ecosystems (U.S. Global Change Research Program, 2014).

In August 2016, the CEQ issued its final *NEPA Guidance on Considerations of the Effects of Climate Change and Greenhouse Gas Emissions* (CEQ, 2016). This memorandum provides guidance on the ways in which federal agencies can improve their consideration of the effects of GHG emissions and climate change in the evaluation of proposals under NEPA. It further advises federal agencies to consider a quantitative and qualitative assessment of impacts if the direct CO_2e emissions from the proposed action may be reasonably anticipated to exceed 25,000 metric tons or more on an annual basis (CEQ, 2016). This level of emissions should not be considered a significance threshold under NEPA. Currently, there are no formally adopted or published NEPA thresholds of significance for GHG emissions because of the problematic nature of determining at what level proposed emissions would substantially contribute to climate change. The potential effects of the GHG emissions from the proposed action are by nature global and cumulative, as individual sources of GHG emissions are not large enough to have an

appreciable effect on climate change. Therefore, the appreciable impact on global climate change would occur when proposed GHG emissions combine with GHG emissions from other man-made activities and natural sources on a global scale (USEPA, 2016c). Therefore, GHG emissions are considered cumulatively with other global sources of GHG.

Implementation of Alternative 1 at NAS Key West would contribute directly to emissions of GHGs from the combustion of fossil fuels. During demolition, construction, and clearing activities, 602 metric tons of CO_2e would be produced; once the home basing action is completed and all aircraft and personnel are at the station, about 740 metric tons of CO_2e emissions would be produced annually (see Table 4-5). Emissions of GHGs from Alternative 1 alone would not cause global warming that could lead to climate change. However, these emissions would increase the atmosphere's concentration of GHGs and could incrementally contribute to global warming.

Because of the importance of sustainability for the DoD mission, DoD has implemented GHG emissions goals in response to the President's EO 13653, *Preparing the United States for the Impacts of Climate Change*. The DoD has set a goal to reduce GHG direct emissions from their owned/controlled facilities (scope 1) and indirect emissions from owned/controlled facilities (scope 2) by 18 percent by Fiscal Year (FY) 2020 from the FY 2008 baseline. The DoD is planning to meet these GHG reduction targets by developing energy efficiency in facilities, identifying new strategies to minimize GHG emissions, and using innovative approaches and renewable energy (DoD, 2015). Additionally, DoD plans to reduce its scope 3 emissions (indirect emissions from DoD activities that are from sources not owned or directly controlled by DoD) by 13.5 percent by FY 2020 from the FY 2008 baseline. The DoD *Strategic Sustainability Performance Plan* provides annual updates on reaching GHG reduction goals (DoD, 2015). In 2014, DoD GHG emissions, spanning all sources, continued to edge down with target emissions 13.1 percent below the FY 2008 baseline (DoD, 2015). Examples of Navy-wide GHG reduction projects include energy efficient construction, thermal and photovoltaic solar systems, geothermal power plants, and the generation of electricity with wind energy. The Navy continues to promote and install new renewable energy projects.

In addition to addressing the GHG emissions that would be generated from Alternative 1, CEQ guidance recommends addressing the implications of climate change for the environmental effects of a proposed action, including the adaptation strategies the agency would develop in response to climate change. Climate change has important implications for naval force structure and operations. Factors driving this include the potential impact of sea level rise on installations, operations, and plans; changing storm patterns and severity; and water and resource challenges (U.S. Navy, 2012). In response, the 2014 Unified Facilities Criteria (UFC) for High Performance and Sustainable Building Requirements (UFC 1-200-02), mandates the consideration of changing climate conditions when designing buildings, including potential increased heating or cooling requirements. Additionally, the DoD issued a Floodplain Management Policy in February 2014 that establishes requirements to minimize risks when military assets must be located within floodplains.

Climate change is a clear national security concern and forecasted to affect DoD more significantly in the future. The 2014 DoD *Climate Change Adaption Roadmap* (DoD, 2014a) and DoD Directive 4715.21, *Climate Change Adaptation and Resilience* (DoD, 2016a), describe DoD plans to address this challenge and codify roles and responsibilities for action across DoD. These policies implement the requirements of EO 13653, *Preparing the United States for the Impacts of Climate Change*.

The DoD, U.S. Navy, and NASA are actively engaging in improving their resiliency to climate change: from conducting screening surveys to assess vulnerability of installations from severe weather and projected changes in climate, to developing tools to help installations assess how much water they need to satisfy mission requirements. The DoD is also implementing new *Floodplain Management on Department of Defense Installations* (DoD, 2014b) and a new policy on water rights and water resource management (DoD, 2014b). A program of breakthrough research on climate science is also being conducted by NASA that enhances the ability of the international scientific community to advance global integrated earth system science using space-based observations. The agency's research encompasses solar activity, sea-level rise, the temperature of the atmosphere and the oceans, the state of the ozone layer, air pollution, and changes in sea ice and land ice (NASA, 2015c). As climate science advances, DoD, the U.S. Navy, and NASA will regularly evaluate climate change risks and opportunities in order to develop policies and plans to manage its effects on the DoD operating environment, missions, and facilities.

4.4 Biological Resources

As identified in Section 3.4, this analysis focuses on three major biological resources categories: vegetation, wildlife, and special status species.

4.4.1 Affected Environment

The affected environment for biological resources includes the area proposed for construction adjacent to Runway 08/26 and East Side Drive, at Boca Chica Airfield on NAS Key West and the airfield environment where Triton UAS operations would occur (Figure 4-2).

4.4.1.1 Vegetation

Landscaping. Maintained grass lawns and non-native landscape vegetation cover the pervious, maintained acreage at high use facility areas of the airfield. Non-native upland vegetation primarily consists of maintained grass lawns and ornamental plantings. Scattered trees are present on the property, most of which are Australian pine (U.S. Navy, 2014b; Florida Natural Areas Inventory [FNAI], 2010).

Portion of Area Proposed for Triton UAS Facility Development

Mangrove Swamps. Tidally influenced mangrove swamps occupy extensive coastal areas throughout the undeveloped portions of Boca Chica Airfield (1,354 acres), and identified in Figure 4-2. Tidal swamp is a dense forest occurring along relatively flat, low wave energy, marine, and estuarine shorelines. The dominant plants of tidal swamps are red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erectus*). The density and height of mangroves and the diversity of associated herbaceous species can vary considerably within a tidal swamp. Mangroves typically occur in dense stands but may be sparse, particularly in upper tidal reaches where tidal marsh species predominate. Mangroves may range from trees more than 80 feet tall to dwarf shrubs growing on solid limestone rock but most commonly exist at intermediate heights of 10 to 20 feet tall. Tidal swamps often exist with no understory; however, where shrubs, vines, and herbaceous species are present, they occur most commonly in openings and along swamp edges (U.S. Navy, 2014b; FNAI, 2010).

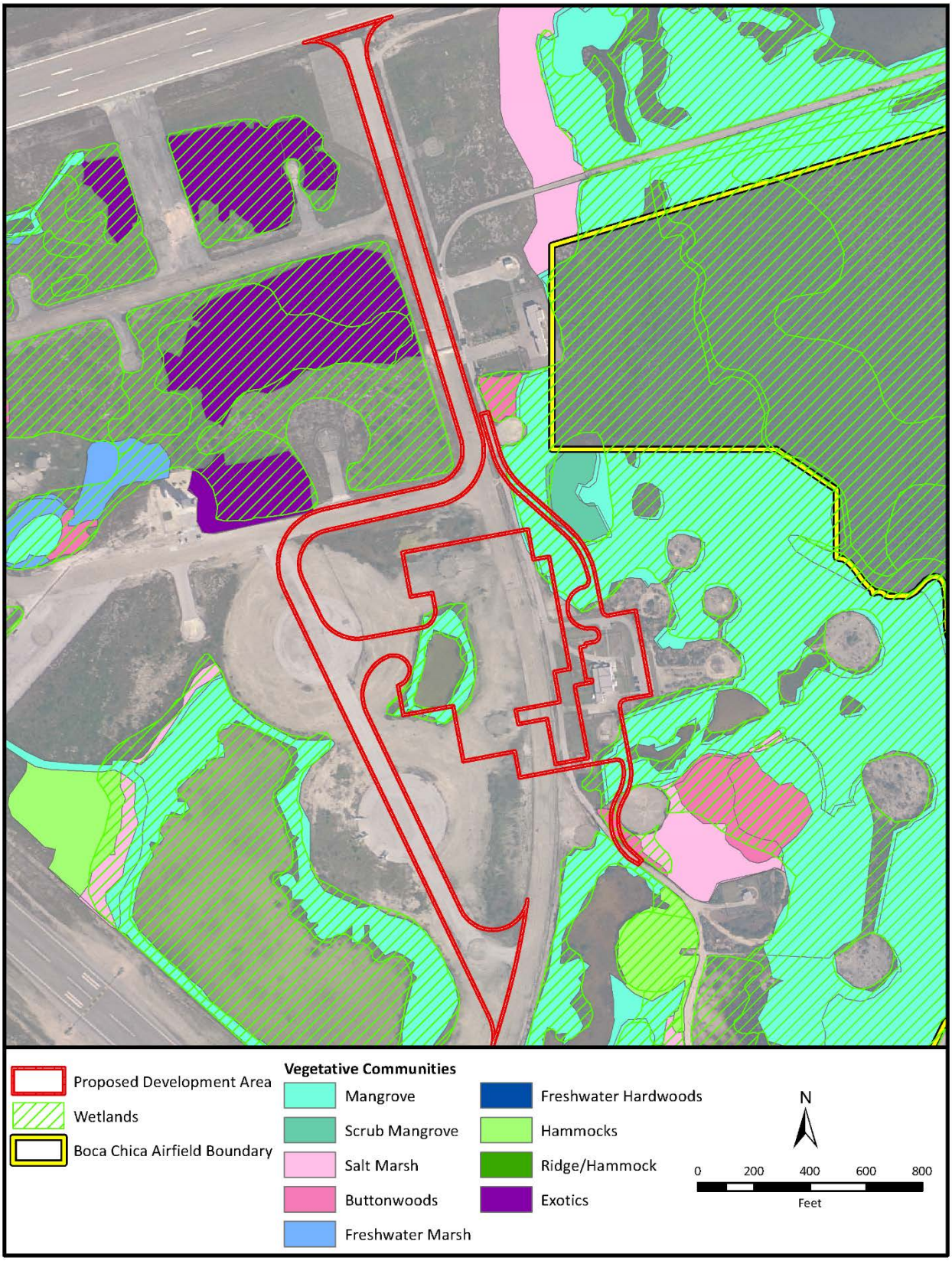


Figure 4-2 Alternative 1 Vegetation Communities Near Project Area

Salt Marsh and Buttonwood. Salt marsh and buttonwood wetlands are tidally influenced transitional wetlands, which lie landward of the mangrove fringe and seaward of the upland community (408 acres) (Figure 4-2). Two basic wetland communities occur within the transition zone in the Florida Keys. Salt marshes are the lower transitional wetlands, while buttonwood associations are generally higher transitional wetlands occurring between the salt marshes and the high upland habitats. The type of transitional association that develops in the Keys is a function of tide and topography. Salt marsh and buttonwood wetlands are less frequently flooded than mangrove forests. They provide valuable stormwater storage and wildlife habitat, as well as maintenance and improvement of water quality. Salt marshes are typified by salt-tolerant grasses and herbs and buttonwood wetlands are salt marshes that also feature buttonwood trees (U.S. Navy, 2014b; FNAI, 2010).

Exotic Invasives. The FNAI completed an exotic plant inventory for the Boca Chica Airfield property in 2005 (FNAI, 2005). The survey documented 2,353 occurrences of 47 exotic and invasive plants totaling 66 acres (see Figure 4-2). The most prevalent exotic invasive plants that were found include Australian pine (*Casuarina* spp.), Brazilian pepper (*Schinus terebinthifolius*), latherleaf (*Colubrina asiatica*), white leadtree (*Leucaena leucocephala*), sisal hemp (*Agave sisalana*), and melaleuca (*Melaleuca quinquenervia*). These species pose the greatest threat to natural areas on Boca Chica Airfield as they could invade and subsequently degrade the natural habitats. Eradication and control of these six species is a priority for NAS Key West and the management prescription is presented in NAS Key West's INRMP (U.S. Navy, 2014b).

4.4.1.2 Wildlife

While the majority of the affected environment comprises paved and graveled areas, the wildlife associated with the maintained, landscaped grassy areas include birds, raccoons, mice, frogs, snakes, and lizards. Adjacent to the site are tidal mangrove and salt marsh swamp communities that are typically inhabited by mangrove water snake (*Nerodia clarkii compressicauda*), brown pelican (*Pelecanus occidentalis*), white ibis (*Eudocimus albus*), osprey (*Pandion halietus*), prairie warbler (*Dendroica discolor*), and mangrove cuckoo (*Coccyzus minor*).

4.4.1.3 Special Status Species

Special status species are defined as: (1) federally listed plant and animal species and their habitats that are protected under the Endangered Species Act (ESA); and (2) other special status species, including bald and golden eagles, and migratory birds.

Endangered Species Act

Based on a review of historical survey data (Gulledge et al., 2011), NAS Key West's INRMP (U.S. Navy, 2014b), and the U.S. Fish and Wildlife Service (USFWS) Information Planning and Conservation System, the species listed in Table 4-6 were identified as potentially occurring in the vicinity of Alternative 1, Figure 4-2 provided an illustration of habitat. Fish, corals, and marine mammals were excluded from the list based on the location of Alternative 1 in an upland portion of NAS Key West. Descriptions of select species that could be found in the affected environment immediately follow the table.

Table 4-6 Endangered Species Act Listed Species Potentially Occurring in the Vicinity of Alternative 1, Naval Air Station Key West

Species	***Scientific Name***	***Status***		***Expected Occurrence***
		Species	*Critical Habitat*	
Birds				
Audubon's Crested Caracara	*Polyborus plancus audubonii*	T	Not designated	Not expected
Bachman's Warbler	*Vermivora bachmanii*	E	Not designated	Not expected
Cape Sable Seaside Sparrow	*Ammodramus maritimus mirabilis*	E	None in project area	Not expected
Everglade Snail Kite	*Rostrhamus sociabilis plumbeus*	E	None in project area	Not expected
Ivory-billed Woodpecker	*Campephilus principalis*	E	Not designated	Not expected; likely extinct
Piping Plover*	***Charadrius melodus***	**T**	**None in project area**	**Rare**
Red Knot	***Calidris canutus rufa***	**T**	**Not designated**	**Rare**
Roseate Tern	***Sterna dougallii dougallii***	**T**	**Not designated**	**Rare**
Wood Stork	*Mycteria americana*	T	Not designated	Not expected
Reptiles				
American Crocodile	***Crocodylus acutus***	**T**	**None in project area**	**Rare**
Eastern Indigo Snake	*Drymarchon corais couperi*	T	Not designated	Not expected
Loggerhead Sea Turtle	***Caretta caretta***	**T**	**None in project area**	**Proximate only**
Green Sea Turtle	***Chelonia mydas***	**T**	**None in project area**	**Proximate only**
Hawksbill Sea Turtle	***Eretmochelys imbricata***	**E**	**None in project area**	**Proximate only**
Leatherback Sea Turtle	***Dermochelys coriacea***	**E**	**None in project area**	**Proximate only**
Plants				
Big Pine Partridge Pea	*Chamaecrista lineata keyensis*	PE	Not designated	Not expected
Blodgett's Silverbush	*Argythamnia blodgettii*	PT	Not designated	Not expected**
Cape Sable Thoroughwort	*Chromolaena frustrata*	E	None in project area	Not expected
Garber's Spurge	*Chamaesyce garberi*	T	Not designated	Not expected**
Key Tree Cactus	*Pilosocereus robinii*	E	Not designated	Not expected
Sand Flax	*Linum arenicola*	PE	Not designated	Not expected

Table 4-6 Endangered Species Act Listed Species Potentially Occurring in the Vicinity of Alternative 1, Naval Air Station Key West

Species	***Scientific Name***	***Status***		***Expected Occurrence***
		Species	*Critical Habitat*	
Wedge Spurge	*Chamaesyce deltoidea serpyllum*	PE	Not designated	Not expected
Insects and Invertebrates				
Stock Island Tree Snail	*Orthalicus reses* (not incl. *nesodryas*)	T	Not designated	Not expected
Bartram's Hairstreak Butterfly	*Strymon acis bartrami*	E	None in project area	Not expected
Florida Leafwing Butterfly	*Anaea troglodyta floridalis*	E	None in project area	Not expected
Miami Blue Butterfly	*Cyclargus (=Hemiargus) thomasi bethunebakeri*	E	Not designated	Not expected
Schaus Swallowtail Butterfly	*Heraclides aristodemus ponceanus*	E	Not designated	Not expected
Mammals				
Florida Panther	*Puma (=Felis) concolor coryi*	E	Not designated	Not expected
Key Deer	*Odocoileus virginianus clavium*	E	Not designated	Not expected
Key Largo Cotton Mouse	*Peromyscus gossypinus allapaticola*	E	Not designated	Not expected
Key Largo Wood Rat	*Neotoma floridana smalli*	E	Not designated	Not expected
Lower Keys Marsh Rabbit	***Sylvilagus palustris hefneri***	**E**	**Not designated**	**Occasional**
Silver Rice Rat	***Oryzomys palustris natator***	**E**	**None in project area**	**Proximate only**

Note: ***Bold species** indicates a reasonable potential for occurrence in the NAS Key West project area.
**Gulledge et al., 2011, area would be surveyed prior to construction.
Legend: T = threatened; E = endangered; P = proposed

Listed birds. The roseate tern (*Sterna dougallii*), piping plover (*Charadrius melodus*), and red knot (*Calidris canutus rufa*) are federally threatened bird species occurring on NAS Key West property. Roseate terns are known to nest on a few select rooftops at NAS Key West properties. They forage for small schooling fish over shallow waters around bays, channels, sandbars, shoals, and reefs (Gochfeld et al., 1998; Nisbet and Spendelow, 1999), and are known to forage over deeper waters than other tern species (Olsen and Larsson, 1995). Piping plovers and red knots do not nest in the Florida Keys, but overwinter and migrate through during fall, winter, and spring. However, no critical habitat is located in the area proposed for Triton UAS development; piping plovers and red knots typically inhabit shoreline and open limestone habitats in the Keys, foraging in the intertidal zone of beaches and marshes.

Listed nesting sea turtles. Loggerhead, green, hawksbill, and leatherback sea turtles may nest occasionally along shorelines at NAS Key West. However, no critical habitat is located in the area proposed for Triton UAS development. Loggerhead sea turtles are the most frequent nesters of the four species, but the numbers of loggerhead nests documented on NAS Key West each year are very low.

Other listed species. The Lower Keys marsh rabbit (LKMR) (*Sylvilagus palustris hefneri*) is a federally endangered species endemic to the Lower Keys. The LKMR occupies freshwater wetlands and the salt marsh/buttonwood transition zone that separates mangroves from upland vegetation types (Forys, 1995; Faulhaber, 2003). The LKMR is found only in the Lower Keys and is not found east of the Seven Mile Bridge (USFWS, 1990). Listed as endangered in 1990, the LKMR exists as a metapopulation (a set of populations persisting in a balance between local extinction and colonization), restricted to small patches of wetland habitat in Florida's Lower Keys (USFWS, 1990; Forys and Humphrey, 1996). No critical habitat is located in the area proposed for Triton UAS development.

The American crocodile (*Crocodylus acutus*) inhabits fresh and brackish coastal habitats, but ventures into more saline environments and will cross long expanses of dry ground. It is federally threatened and the population has recovered in recent decades due to conservation efforts. American crocodiles are occasionally sighted on the Boca Chica Airfield and surveys conducted in 2014 documented 21 observations. No critical habitat is located in the area proposed for Triton UAS development.

The federally endangered silver rice rat (*Oryzomys argentatus*) is endemic to the lower Florida Keys and almost exclusively inhabits saltmarsh habitat. NAS Key West conducts regular surveys for silver rice rats on its properties. Although much of the low-saltmarsh and dwarf mangrove habitats on Boca Chica Key are suitable for silver rice rats, no specimens have been captured in the 2004 and 2010 surveys.

Other Special Status Species

Bald eagle (*Haliaeetus leucocephalus*). Removed from the federal threatened and endangered species list in 2007, the bald eagle still has federal protection under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA). Bald eagles may occur year-round at NAS Key West in small numbers, but no active nests have been documented since 2012.

Migratory birds. The installation's INRMP describes 132 species of birds as being observed onsite during surveys performed by Audubon Society members since 2000 (U.S. Navy, 2014b). Of these, all but three are on the USFWS list of MBTA-protected species. To support conservation, the station monitors for resident and transient migratory birds to determine population trends in association with habitat management; protects the remnant natural habitats that support migratory birds; and develops management strategies for high priority species designated in the Bird Conservation Plan for Subtropical Florida (U.S. Navy, 2014b).

Climate Change

Under the affected environment, climate change is manifesting itself in rising sea levels, melting sea ice and glaciers, changing precipitation patterns, growing frequency and severity of storms, and increasing ocean acidification. As rising sea levels have pushed saltwater into areas, peat soils are degrading, and plants and trees have died (USFWS, 2010). These changes have generally impacted many of the wildlife species in the southeastern U.S., including the special status species identified above. For example, warmer winters are changing the birds' migratory patterns. Sooty terns, which nest in the Dry Tortugas off Key West, are showing up earlier and earlier. Roseate spoonbills, which generally stay in Florida, the Gulf Coast, and points south, are now regularly spotted in South Carolina. However, direct changes to distribution patterns of the special status species present on NAS Key West have not been documented.

4.4.2 Environmental Consequences

This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law or statute.

4.4.2.1 No Action Alternative

Under the No Action Alternative, this alternative would not be implemented and there would be no change to biological resources. Therefore, existing conditions for biological resources would remain unchanged if the No Action Alternative were implemented.

4.4.2.2 Alternative 1: Naval Air Station Key West, Florida

The affected environment for the analysis of effects to biological resources associated with Alternative 1 includes the approximate 21 acres disturbed by facility and infrastructure construction. The sanitary sewer line would be installed within the right-of-ways of existing roads so it would not disturb vegetation, wildlife, or special status species. The affected environment also includes the area subjected to noise-level changes from construction and Triton UAS operational activities.

Vegetation

Under Alternative 1, at NAS Key West, about 21 acres would be impacted; of which 2 acres are maintained vegetation that would be removed when undergoing demolition and construction. While construction is predominantly located on upland areas, during construction, the mangrove swamp habitat would be buffered against stormwater runoff to minimize erosion and sedimentation. Once the Triton UAS aircraft are operational, the air station would continue to manage all important and natural plant communities under the programs outlined in its INRMP and subsequent annual updates (U.S. Navy, 2014b). Without climate change, there would be no significant impacts to vegetation communities from implementing Alternative 1, NAS Key West.

NAS Key West Potential Biological Resource Impacts:

- The No Action Alternative would not change existing conditions found for biological resources.
- Alternative 1: Up to 21 acres would be impacted, of which 2 acres are maintained grassy vegetation.
- Alternative 1: Construction noise may result in minor behavioral disturbance. However, effects to feeding, sheltering, and reproduction are not anticipated, and temporary alterations to behavior would return to normal once construction is complete.
- Alternative 1: Once operational, Triton UAS operations would introduce 3.5 percent more operations, producing a less than 1 dB DNL increase in the noise levels. This amount of change would negligibly impact wildlife.
- Alternative 1: Pursuant to the ESA, federally listed species may be affected but are not likely to be adversely affected by this alternative. Pursuant to the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, no harm or incidental take of eagles or migratory birds is anticipated.

Wildlife

Noise created during construction and demolition activities may result in minor behavioral disturbance of wildlife. However, these negligible changes in behavior are not expected to differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Once construction is complete, abundance and frequency of wildlife occurring in the project area are expected to return to prior levels. Given the current level of air traffic, and the Triton

UAS's relatively low SELs, impacts to wildlife in the vicinity would be negligible under Alternative 1, NAS Key West.

Special Status Species

Endangered Species Act. Similar to the potential effects on wildlife described above, only minor behavioral disturbance to federally protected species may occur resulting from construction noise. Avoidance of the immediate area during construction may result; however, effects to ESA-listed species would be insignificant and discountable. Behavior is expected to return to normal once construction activities are complete. Table 4-7 lists the species found within the area proposed for development under Alternative 1; the table also identifies the potential effect of implementing this alternative.

Table 4-7 Endangered Species Act Conclusions for Alternative 1, Naval Air Station Key West

Species	***Scientific Name***	***Conclusion***	
		Species	*Critical Habitat*
Birds			
Piping Plover	*Charadrius melodus*	May affect, not likely to adversely affect	No effect
Red Knot	*Calidris canutus rufa*	May affect, not likely to adversely affect	n/a
Roseate Tern	*Sterna dougallii dougallii*	May affect, not likely to adversely affect	n/a
Reptiles			
American Crocodile	*Crocodylus acutus*	May affect, not likely to adversely affect	No effect
Green Sea Turtle	*Chelonia mydas*	May affect, not likely to adversely affect	No effect
Hawksbill Sea Turtle	*Eretmochelys imbricata*	May affect, not likely to adversely affect	No effect
Leatherback Sea Turtle	*Dermochelys coriacea*	May affect, not likely to adversely affect	No effect
Loggerhead Sea Turtle	*Caretta caretta*	May affect, not likely to adversely affect	No effect
Mammals			
Lower Keys Marsh Rabbit	*Sylvilagus palustris hefneri*	May affect, not likely to adversely affect	n/a
Silver Rice Rat	*Oryzomys palustris natator*	May affect, not likely to adversely affect	No effect

Legend: n/a=not applicable.

Sea turtles are known to nest in very low numbers at Boca Chica, outside of the project area. Once the hangar and supporting infrastructure are operational, there may be minor alterations to the location and intensity of lighting in the project area. Changes to existing lighting have the potential to impact nesting sea turtles, but based on the very low numbers nesting at Boca Chica and distance from the nesting areas to the project area, effects are expected to be insignificant and discountable. Further, the Navy would ensure, to the extent warranted and consistent with operational safety and security concerns that lights installed would adhere to the Florida Fish and Wildlife Conservation Commission Approved Sea Turtle Lighting Guidelines. The use of appropriate lights and fixtures—to include the use of amber light emitting diode bulbs, limiting the height of fixtures when appropriate, and shielding bulbs to prevent direct light shining towards the beach and mitigate unnecessary sky glow—would ensure that

Alternative 1 does not negatively affect nesting sea turtles and hatchlings. These measures would be incorporated into construction contract requirements to the maximum extent practicable.

To minimize impacts to the LKMR, the construction area would be searched each day before work begins and an observer would be stationed to walk ahead of moving construction equipment in areas where ground cover may conceal a LKMR. An increase in traffic in/around the construction area and once Triton UAS flight operations have started would also increase potential for vehicle collisions and physical injury to federally protected species, primarily the LKMR. Historic reports of vehicle mortalities are focused in other areas of NAS Key West, and none has been reported in the project area. Construction crews and incoming Navy personnel would participate in an environmental awareness briefing that includes specific details on federally protected species and protective measures such as strictly observing speed limits. Informational signage would also be posted along the roads to maintain daily awareness and minimize potential for vehicle collisions. Airfield operations associated with Alternative 1 would also be performed in accordance with the respective biological opinions (BO) (per the BO for airfield operations at NAS Key West, USFWS Log #4-1-92-333 and the BO for restoration of clear zones and stormwater draining systems SCC 41420-2006-F-0297).

Due to the high mobility of crocodiles, it is not expected that any will be harmed by implementing Alternative 1. Habitat impacts would be minor, with large areas of high quality habitat remaining in other locations around the installation (Mazzoti, 2014). Additionally, areas impacted by Alternative 1 development would be surveyed for American crocodiles immediately prior to construction activities to ensure no individuals are impacted.

Although much of the low-saltmarsh and dwarf mangrove habitats on Boca Chica Key are suitable for silver rice rats, no specimens have been captured there despite ongoing surveys by USFWS. Further, the area proposed for development is above saltmarsh habitat, so it is not likely to be a desired habitat for the species and as such, silver rice rats likely would not be impacted.

Pursuant to the ESA, Alternative 1 at NAS Key West:

- may affect, but is not likely to adversely affect the LKMR;
- may affect, but is not likely to adversely affect American crocodiles and would have no effect on critical habitat because no such habitat is located in the project area;
- may affect, but is not likely to adversely affect silver rice rats and would have no effect on critical habitat because the project area does not support such habitat;
- may affect, but is not likely to adversely affect green, hawksbill, leatherback, and loggerhead sea turtles or their hatchlings and would have no effect on their critical habitat because none is located in the project area; and
- may affect, but is not likely to adversely affect piping plovers, red knots, roseate terns and would have no effect on piping plover habitat because no such habitat is located in the project area.

The Navy initiated informal consultation with the USFWS South Florida Ecological Services Office on June 2, 2015; a response is pending. The correspondence is provided in Appendix B.

Other Special Status Species

Bald Eagles. Bald eagles are regularly observed in low numbers around NAS Key West, but no nests have been documented since 2012. There is no suitable nesting habitat in the project area and foraging habitat is of marginal value compared to other areas of the Florida Keys. Therefore, it is unlikely that

construction or Triton UAS operations would impact bald eagles if Alternative 1 were implemented at NAS Key West. Pursuant to the Bald and Golden Eagle Protection Act, no harm or incidental take of bald eagles is anticipated.

Migratory Bird Treaty Act. Military-readiness activities associated with Alternative 1, NAS Key West, would include Triton UAS flight operations. Non-military readiness activities include construction of the facilities and once home based, administration and maintenance operations. Prior to construction, surveys would be undertaken to ensure that neither resident nor transient bird species are present. While migratory birds may occur during construction and operation, previous disturbance has resulted in relatively low-quality habitat in the project area. Similar to effects described above for other wildlife, temporary behavioral disturbance may result from noise or human activities. However, these minor changes are not expected to differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Once construction is complete, abundance and frequency of migratory birds occurring in the project area are expected to return to prior levels. Pursuant to the Migratory Bird Treaty Act, no harm to or incidental takes of migratory birds are anticipated.

Climate Change

In the southeast, rising sea levels are expected to flood as much as 30 percent of the habitat on the USFWS's coastal refuges. Some of the places most vulnerable to sea level rise in the U.S. are in the southeast, including the Florida Coast, the Keys, and the Everglades. The average annual temperature has risen about 2 degrees Fahrenheit, with substantially warmer winters. Climate models project an increased rate of warming across the southeast through 2100. The number of freezing days has declined by four to seven days per year since the mid-1970s. There has been an increase in heavy downpours in many parts of the southeast, while the areas experiencing severe drought have increased over the past three decades (USFWS, 2016).

Although Alternative 1 would not be directly impacted by climate change in the next decade or so, changes in distribution patterns of wildlife and special status species may be encountered. However, Alternative 1 does not have environmental effects, such as reducing water resources, habitat alterations, or species distribution changes that could be exacerbated by climate change in the foreseeable future. Because monitoring climate change is a dynamic process, the Navy will continue to analyze any potential climate change effects in the project area and also any adaptation measures that may be necessary.

4.5 Water Resources

As identified and defined in Section 3.5, the discussion of water resources includes groundwater, surface water, wetlands, and floodplains.

4.5.1 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under water quality resources at NAS Key West. The affected environment for water resources includes the area proposed for construction adjacent to runway 08/26 and East Side Drive, at Boca Chica Airfield. Compliance with the Coastal Zone Management Act is addressed in Section 10.1, Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations.

4.5.1.1 Groundwater

Groundwater is contained in two major aquifers that underlie the Florida Keys, the Biscayne Aquifer (also referred to as the Surficial Aquifer) and the Floridan Aquifer. The Biscayne Aquifer is the primary system and is one of the most productive and permeable aquifers in the world, due to the geology of the Keys. However, the Biscayne Aquifer is only capable of providing non-potable water due to excessive chloride concentrations. The freshwater lens averages 5 feet below the central western half of Key West and contains approximately 20 to 30 million gallons of freshwater. The lens is subject to saltwater intrusion, as porous Key Largo limestone underlies the Miami oolite limestone on which Key West Island is situated (U.S. Navy, 2014b). There are no known potable artesian water sources in Key West.

4.5.1.2 Surface Water

NAS Key West is located within the Florida Bay-Florida Keys watershed that encompasses approximately 2,043 square miles. Due to geology and topography, rainfall events have not created extensive natural drainage systems within the Florida Keys and major freshwater surface waters do not exist at NAS Key West. The primary receiving waters for the Florida Keys are the Gulf of Mexico and the Atlantic Ocean, with smaller lagoons, creeks, and channels also receiving water. Rainfall is generally carried to the surrounding tidal waters by overland flow or storm drains. Much of the rainfall also percolates directly into the underlying porous limestone (U.S. Navy, 2014b).

NAS Key West property accounts for approximately 27 miles of shoreline. Tidal range throughout the Keys is low, with a mean tidal range of 1.3 feet and a spring tidal range of 1.6 feet. Due to low elevations, tidal surge must be considered during the design phase of projects at NAS Key West (U.S. Navy, 2014b).

Surface water quality is an important issue, as the waters surrounding the Florida Keys have been designated Class III, Outstanding Florida Waters (62-302.400 Florida Administrative Code). This designation essentially prohibits any activities that would significantly diminish the ambient water quality. NAS Key West is regulated by the USEPA's National Pollutant Discharge Elimination System (NPDES) and the Stormwater Multi Sector General Permit (MSGP). Under the MSGP permit, NAS Key West is required to develop a Storm Water Pollution Prevention Plan (SWPPP) that is reviewed/updated annually (U.S. Navy, 2014b). The three main components of the SWPPP are stormwater monitoring, best management practices implementation, and site compliance evaluations.

Stormwater runoff on Boca Chica Airfield is handled through a system of stormwater conveyances that drain into natural areas, wetland areas, and stormwater ponds prior to discharging to surrounding water bodies. This provides natural storage resulting in increased retention times and functions to minimize stormwater and sedimentation impacts to surrounding surface water bodies. While the minimal elevation and flat topography of the area hinder stormwater drainage and treatment, drainage restoration activities continue to result in an overall improvement to airfield drainage (U.S. Navy, 2007b).

4.5.1.3 Wetlands

The Florida Keys have a variety of wetland communities, including freshwater wetlands, depression wetlands, brackish swamps, mangrove swamps, seagrass beds, and hypersaline swamps and marshes. At Boca Chica Airfield, there are two categories of wetlands: coastal wetlands and freshwater wetlands. Coastal wetlands include mangrove forests, scrub mangroves, grassy saltmarshes, and low saltmarshes. Freshwater wetlands include freshwater marshes and freshwater hardwoods.

Wetland communities at NAS Key West and in the Florida Keys have been identified through a joint program of the USEPA and the U.S. Army Corps of Engineers (USACE), in cooperation with the USFWS, South Florida Water Management District, Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute, and Monroe County. This program, known as the Florida Keys Advance Identification of Wetlands Program, has created an inventory and map of wetlands in the Keys using Geographic Information System (GIS) data and photo interpretation of aerial imagery (U.S. Navy, 2014b). Wetlands at NAS Key West have not been delineated using the USACE 1987 Wetland Delineation Manual so there are no reliable wetland acreages associated with NAS Key West properties. Occasionally, NAS Key West undertakes an action to maintain or renovate existing facilities that may require wetland permitting. If it is determined that wetland impacts would occur from a planned activity, mitigation in the form of wetland creation, restoration, enhancement of previously degraded wetlands, purchase of wetland credits, or payment in lieu of fees may occur based on permitting requirements.

4.5.1.4 Floodplains

Elevations on Boca Chica Airfield range from 2 feet below mean sea level (MSL) to 6 feet above MSL, with the average being approximately 4 to 5 feet above MSL around the runways. However, large interior areas of the island have elevations ranging from 0 to 2 feet below MSL. The 100-year and 500-year tidal storm surges are 8 feet above MSL and 12 feet above MSL, respectively. Therefore, the entirety of Boca Chica Airfield is located within a designated 100-year and 500-year tidal storm surge area (Federal Emergency Management Agency, 2016). The potential for strong currents and wave action compounds the flood hazard and areas are subject to flooding from lesser storm surges about once every 15 years (U.S. Navy, 2014b).

4.5.2 Environmental Consequences

Factors considered in the analysis of potential impacts to water resources include: (1) violation of federal and/or state water quality standards, (2) substantial depletion of groundwater supplies or interference with groundwater recharge, (3) alteration of existing drainage patterns, (4) degradation of the area's ecosystem due to the direct discharge of fill material into a pristine wetland, and (5) creating or worsening flood hazard conditions in a manner that endangers people or structures.

4.5.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline water resources. Therefore, no significant impacts to water resources would occur with implementation of the No Action Alternative.

4.5.2.2 Alternative 1: Naval Air Station Key West, Florida

The study area encompasses the proposed construction and ground disturbance areas related to Alternative 1.

Groundwater

Alternative 1 would not result in significant vegetation removal; soil compaction, as soils in the proposed development area have been previously disturbed; or alteration of the natural drainage flow, as pre-construction hydrologic connectivity would be maintained through the use of culverts and other measures, as deemed appropriate.

None of the construction or demolition activities associated with Alternative 1 would extend below ground surface to a depth that would affect the underlying aquifer. Although fuel or other chemicals could be spilled during construction and demolition activities, implementation of the required Spill Prevention, Control, and Countermeasures (SPCC) Plan and immediate cleanup of any spills would prevent infiltration into groundwater resources.

Additional personnel (plus their dependents) would result in a long-term increase in demand for potable water. However, this long-term increase in demand would not be expected to exceed existing capacity of the regional water supply. NAS Key West and the Lower Keys have experienced decreases in population over the past decade. Subsequently, there is excess capacity of potable water because the existing potable water distribution systems were originally designed to support a larger population. Therefore, no impacts to groundwater would be expected from implementation of Alternative 1.

NAS Key West Potential Water Resources Impacts:

- Under the No Action Alternative, no significant impacts to water resources would occur.
- Alternative 1: Groundwater would not be affected by construction or operations.
- Alternative 1: During construction, erosion and sedimentation controls would ensure no significant impacts to surface waters. Once operational, no significant impacts would occur because of home basing the Triton UASs at NAS Key West.
- Alternative 1: About 3 acres of wetlands would be impacted during construction. Mitigation would reduce this adverse impact to less than significant effect. No impacts to wetlands once the Triton UASs are operational.
- Alternative 1: Proposed construction would occur in the 100-year floodplain. No practicable alternative is available as the entire air station is located in the floodplains. No impacts to the floodplains once the Triton UASs are operational.

Surface Water

Approximately 5 acres of impervious surfaces would be added to NAS Key West. Localized increases in stormwater runoff could potentially occur; however, any possible increases would not exceed the current capacities of stormwater systems at the station. Retention structures would be provided to collect stormwater from the newly developed area. These stormwater retention structures would be designed, through size and depth of the retaining areas and the manner in which it drains to the system, to discharge no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Construction practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. Stormwater best management practices and standard operating procedures are detailed in the air station's SWPPP. Additionally, a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development," would be used to minimize

stormwater effects. These practices could include reducing impervious surfaces, using porous pavements, and installing cisterns.

During construction and demolition activities, runoff from site improvements could result in a slight increase in turbidity. Potential impacts from an increase in turbidity would be minimized with implementation of best management practices (e.g., wetting of soils, silt fencing, and detention basins) and adherence to erosion and stormwater management practices, as determined by the Navy, to contain soil and runoff on the project areas. Construction and demolition activities associated with Alternative 1 are not anticipated to degrade the water quality or affect beneficial uses of surface water or groundwater resources.

The Navy would be required to obtain permit coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities ("Construction General Permit") from FDEP for the proposed construction activities prior to any ground disturbance activities. The Navy would select, install, and maintain effective erosion- and sediment-control measures as identified and as necessary to comply with the Construction General Permit (USEPA, 2012). In addition, under the Construction General Permit, the Navy would develop a SWPPP for the proposed construction activities prior to implementing Alternative 1. The SWPPP would describe and ensure implementation of practices that would reduce pollutants in stormwater discharges into the Atlantic Ocean and prevent violations of applicable regulations and standards.

Construction and demolition equipment (e.g., bulldozers, backhoes, dump trucks, and cranes) would be stored at the construction site. Fuels, hydraulic fluids, oils, and lubricants also would be stored to support contractor vehicles and machinery. No other hazardous materials are anticipated to be stored or used at the construction site. Construction contractors would follow appropriate actions to protect against potential petroleum or hazardous material spills. Proper housekeeping, maintenance of equipment, and containment of fuels and other potentially hazardous materials would be conducted to minimize the potential for a release of fluids into groundwater or surface waters. If a spill or leak were to occur, procedures identified in the SWPPP and SPCC Plan would be implemented to contain the spill and minimize the potential for, and extent of, associated contamination. Therefore, no significant impacts to water quality, groundwater, or surface water bodies would be expected from implementing Alternative 1.

Wetlands

It is estimated that approximately 3 acres of estuarine wetland habitat would be impacted if this alternative were implemented. However, a jurisdictional wetland delineation will be performed prior to the start of construction to determine the exact locations of wetlands in the project area, and to inform the permitting process should a permit be required. Once the wetland functions have been determined and concurrence gained from the USACE and the FDEP, the Navy will replace, restore, purchase wetland credits from a mitigation bank, or pay an in lieu fee for the types and amounts of wetlands impacted. Indirect impacts to wetlands, including stormwater discharges or sedimentation, would be minimized through implementation of best management practices (e.g., silt fencing). Compliance with permit conditions and use of best management practices would minimize the potential for effects to wetlands and eliminate any net loss. Therefore, wetland impacts would not be significant.

Floodplain

The entirety of area proposed for development under Alternative 1 is located within the 100- and 500-year floodplain and in a designated storm surge area; therefore, no practicable alternative site on NAS

Key West could be identified. As currently is the case for existing facilities, development at Boca Chica Airfield would expose the Triton UAS facilities and personnel to flooding and storm surge. However, if such inundation events were to occur, personnel would be evacuated and the aircraft flown to a safe location. Additionally, impacts to the floodplain could occur; however, implementation of flood-protection measures would reduce effects to less than significant if Alternative 1 at NAS Key West were implemented.

Triton UAS operations are unlikely to have any adverse impacts to water resources. NAS Key West would continue to operate within all permitted guidelines, follow all SPCC Plans, and adhere to the SWPPP. There would be insignificant impacts to water resources through implementation of Alternative 1.

Climate Change

According to the USEPA, changes to water sources due to increasing temperatures include shrinking water supplies due to hotter weather, increased evaporation, as well as increased demand from humans, animals, and agricultural products. In terms of water quality, freshwater resources along the coast face risks from sea level rise (USEPA, 2016e; Koch-Rose, et al., 2011). As the sea rises, saltwater moves into freshwater areas. For example, the freshwater Everglades currently recharge Florida's Biscayne Aquifer, which provides water supply to the Florida Keys. If rising sea levels submerge low-lying areas of the Everglades, portions of the aquifer would become saline. Additionally, drought can cause coastal water resources such as wetlands to become more saline as freshwater supplies from rivers are reduced. Stormwater and wastewater systems also face risks from rising sea levels and the damaging impacts of storm surges (USEPA, 2016e). Floodplains may also expand and thus expose more infrastructure to increased episodes of inundation.

4.6 Socioeconomics

This section discusses population demographics, employment, and income, and housing occupancy status data provide key insights into socioeconomic conditions that might be affected by implementing Alternative 1. See Section 3.7 for the resource definition and the approach to analysis.

4.6.1 Affected Environment

The study area for socioeconomic resources includes the Key West Census County Division (CCD) and Lower Keys CCD. These two CCDs were identified because they include the city of Key West and other communities within commuting distance of Boca Chica Airfield at NAS Key West. Monroe County and Florida statistics are also provided for comparison purposes. This section addresses population, employment, income, and housing characteristics of the affected environment.

4.6.1.1 Population

The 2014 population of the Key West CCD and Lower Keys CCD was 33,119 and 11,503, respectively (Table 4-8). Both the CCDs and Monroe County had a decline in population between 2000 and 2014 as the Key West CCD population decreased by 1.8 percent and the Lower Keys CCD experienced a decline of 2.1 percent; Monroe County's population decreased 6.3 percent. While population in the study area declined over this span of time, the population in Florida grew by 21 percent. Monroe County's population is projected to grow approximately 0.5 percent from 2014 to 2020, compared to the projected 9.7 percent growth rate for the state (U.S. Census Bureau, 2016; Bureau of Economic and Business Research [BEBR], 2010, 2015). The military and civilian workforce population at NAS Key West in FY 2010 totaled 3,053, which includes 1,598 active duty military personnel, 12 reservists, and 1,443 civilian personnel. The active duty transient population is 1,060 with approximately 12,000 personnel

visiting NAS Key West on an annual basis. There are 2,397 dependents (spouses and children) of military personnel and NAS Key West serves approximately 2,500 retired personnel and their dependents (U.S. Navy, 2011).

Table 4-8 Study Area Population and Population Trends

Jurisdiction	*2000*	*2010*	*2014*	*Growth Rate 2000-2014 (Percent)*	*2020 Projection*	*Growth Rate 2014-2020 (Percent)*
Key West CCD	33,730	32,154	33,119	-1.8	NA	NA
Lower Keys CCD	11,756	9,624	11,503	-2.1	NA	NA
Monroe County	79,589	73,090	74,044	-6.3	74,387	0.5
Florida	15,982,378	18,511,620	19,361,792	21	21,236,667	9.7

Sources: U.S. Census American FactFinder, 2016; BEBR, 2010, 2015.
Note: NA = not available.

4.6.1.2 Employment and Income

Total employment in Monroe County was approximately 38,804 in 2014. County employment by industry in 2014 is shown in Table 4-9. The industries that employed the greatest number of people included leisure and hospitality (35.1 percent); trade, transportation, and utilities (19.1 percent); government (14.3 percent); educational and health services (7.5 percent); professional and business services (6.6 percent); construction (6.1 percent); and financial activities (5.3 percent); all other industries account for the remaining 5.9 percent (Office of Economic and Demographic Research [EDR], 2015).

Table 4-9 Baseline Percent Employed by Industry in the Study Area, 2014

Industry	*Percent*
Leisure and Hospitality	35.1
Trade, Transportation, and Utilities	19.1
Government	14.3
Educational and Health Services	7.5
Professional and Business Services	6.6
Construction	6.1
Financial Activities	5.3
Other Services	3.5
Manufacturing	0.9
Natural Resource and Mining	0.4
Information	1.1
Total	**100**

Source: EDR, 2015.

NAS Key West employs approximately 3,000 military and civilian personnel (not all categorized as government personnel by the U.S. Census Bureau), with annual average earnings of $82,800 (Haas Center, 2013). Payrolls, procurement contracts, and base expenditures at NAS Key West resulted in approximately 2,000 additional indirect jobs with labor income of nearly $110 million and total induced output (payroll and expenditures [operating and capital improvement costs]) of approximately $75 million in 2009 (Wilbur Smith Associates, 2010). Depending on the season and whether visiting personnel are housed on or off station, an estimated $60 to $270 is spent per person per day by visiting squadron personnel (NAS Key West, 2008).

Unemployment rates in Monroe County have decreased since 2010, when the county experienced a high of 7.8 percent to a low of 4.1 percent in 2014. Monroe County's 2014 unemployment rate was lower than the state's rate of 6.3 percent (EDR, 2015). In the Key West CCD, the unemployment rate averaged 3.9 percent in 2014 and had one of the lowest unemployment rates in the state (employment data are available only on a county and city basis) (Bureau of Labor Statistics, 2016).

Total personal income in Monroe County increased by 16.8 percent from 2010 to 2014. In comparison, per capita income in the county had an increase of 41.2 percent from 2000 to 2010. Per capita income grew at 10.9 percent in the county from 2010 to 2014, compared to a 53.2 percent increase from 2000 to 2010 at the state level (EDR, 2015). The slower county rates of increase, from 2010 to 2014, were most likely due to the economic downturn that was especially felt in Florida's housing industry and the associated real estate bubble they experienced.

Median household income in 2014 for Monroe County was $55,449 compared to $53,422 for the Key West CCD and $66,884 for the Lower Keys CCD. Approximately 13.9 percent of Monroe County residents lived in households with incomes below the poverty line, compared to 13.5 percent in the Key West CCD, and 8.3 percent in the Lower Keys CCD (U.S. Census Bureau, 2016).

4.6.1.3 Housing

In 2014, there were approximately 14,100 housing units in the City of Key West and 52,700 housing units in Monroe County (Table 4-10). The estimated 2014 vacancy rate in Monroe County was 46.2 percent, in the Key West CCD it was 34.4 percent, and in the Lower Keys CCD it was 42.6 percent (U.S. Census Bureau, 2016). These rates substantially exceed the state average of 20.2 percent. Both the Key West CCD and Monroe County have a higher percentage of renters (53.0 and 39.5 percent, respectively) in occupied housing units than does the state (33.9 percent) (U.S. Census Bureau, 2016). The Florida Keys are a popular vacation destination and the high vacancy rate generally reflects a greater degree of second or vacation homes in the area.

Table 4-10 Housing Units and Vacancy, 2014

Jurisdiction	*Housing Units*	*Percent Vacant*	*Occupied Housing Units*		
			Total	*Percent Owner*	*Percent Renter*
Key West CCD	17,863	34.4	11,726	47.0	53.0
Lower Keys CCD	7,997	42.6	4,590	74.9	25.1
Monroe County	52,861	46.2	28,418	60.5	39.5
Florida	9,051,851	20.2	7,217,508	66.1	33.9

Source: U.S. Census Bureau, 2016.

The median monthly mortgage for owner-occupied homes in Monroe County was $2,238 and for rental units it was $1,400 per month in 2014. In the Key West CCD, median monthly mortgage was $2,358 per month for owner-occupied homes and $1,484 per month for rental units. In the Lower Keys CCD, the median monthly mortgage payment was $2,244 and monthly rental rate was $1,580 in 2014 (U.S. Census Bureau, 2016).

Family housing at NAS Key West is leased and operated under a Public-Private Venture (PPV). As such, the Navy has turned over day-to-day operation and control of housing to the PPV operator, Balfour Beatty. In this contractual relationship, Balfour Beatty is the responsible party for the future development of family housing on NAS Key West. The PPV agreement was established in 2007 and will last 50 years (until 2057); therefore, the air station has limited options on what they can do for on-station family housing (U.S. Navy, 2011). NAS Key West has 543 housing units located at four separate

locations: Sigsbee Park Annex (367 units), Trumbo Point (129 units), Truman Annex (42 units), and the Navy Branch Medical Clinic (5 units) (U.S. Navy, 2011). In addition, Boca Chica Airfield can accommodate up to 474 beds for permanent and transient bachelor personnel in barracks facilities. At the Truman Annex, there are 315 visitor quarter rooms and at the Trumbo Point Annex there are 270 visitor quarter units (U.S. Navy, 2011). Currently, there is a wait time of up to 2 months for on-station family housing units across NAS Key West (Commander, Navy Installations Command, 2016).

4.6.2 Environmental Consequences

Analysis of impacts to socioeconomics focused on the effects Alternative 1 would have on population, employment and income, and housing. The study area for socioeconomic analyses for Alternative 1 is defined as the Key West and Lower Keys CCDs, where NAS Key West is located and the areas that would be expected to absorb the added population and provide housing.

4.6.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the socioeconomics of the local area or region. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

NAS Key West Potential Socioeconomic Impacts:

- The No Action Alternative would not change any socioeconomic aspects at NAS Key West
- Alternative 1: The 2.8 percent increase in the population would not introduce adverse impacts.
- Alternative 1: There would be short-term beneficial economic effects during construction and long-term beneficial impacts from additional employment incomes.
- Alternative 1: Housing units (owner occupied and rental) are available for increases in personnel and their dependents in the greater Key West and Lower Keys area.

4.6.2.2 Alternative 1: Naval Air Station Key West, Florida

The potential impacts of Alternative 1 at NAS Key West were analyzed by considering any changes to socioeconomic conditions. This analysis examines how Alternative 1 would affect population (i.e., demographics), employment and income, and housing.

Population

Construction and demolition contractors would be drawn from the study area's labor pool. For construction projects of this duration and magnitude, the workforce is generally composed of workers that would commute to job sites rather than relocate their households. As such, the construction and demolition activities are not anticipated to result in either an in-migration or relocation of employees to satisfy the need for temporary construction-related employment. Therefore, no increase in population would be expected from temporary construction workers relocating to the immediate area.

Up to 400 additional personnel would be stationed at NAS Key West, working at Boca Chica Airfield on a long-term basis. Using 2014 demographic information, it is estimated that 52 percent of the 400 personnel would be accompanied by a spouse/partner, for 607 total adults (DoD, 2014c). Accompanying these adults would be 307 dependents, of which 184 children are school age (i.e., ages 5 to 18), for a total population increase of 914 individuals in the study area. This would represent an increase of approximately 2.8 percent in the total population of the Key West CCD and 7.9 percent in the Lower Keys CCD. This long-term population increase would be spread across the two CCDs; therefore, population numbers would not change significantly under Alternative 1, NAS Key West.

Employment and Income

During construction and demolition activities, short-term employment and income provided by civilian contracting firms for up to 2 years would result in beneficial impacts on the local economy directly and indirectly from an increase in demand for goods and services. It is not anticipated that this increase in demand would result in a scarcity of such goods and services in the study area. Use of these services by the temporary workers might constrict their availability to the local population; however, this would be temporary and would not introduce significant negative impacts.

Once the home basing is complete, it was assumed that there would be 914 family members, of whom 207 adults would potentially be seeking employment in the local labor market. According to the DoD 2014 Demographics Report, 66 percent of these dependents would seek employment, which would result in about 137 individuals seeking employment in the area (DoD, 2014c). This less than 1 percent increase to the regional workforce would negligibly affect the local economy. While the labor market in the region is limited, there would be a minor beneficial effect on the local economy due to an uptake in the labor pool and an increase in demand for goods and services in the study area. Indirectly, long-term increases in demand for goods and services would occur and result in negligible benefits to the area economy.

Housing

The Navy provides on-station housing for eligible military personnel in either bachelor (i.e., officer or enlisted) quarters or family housing. However, on-station housing is very limited at NAS Key West; therefore, it is assumed that all of the 400 personnel (and their dependents) would seek housing in the Key West and Lower Keys CCDs area. Personnel living off station are granted a basic allowance for housing (BAH), which can be used to rent or purchase a home. With a housing unit vacancy rate of 34.4 percent in the Key West CCD and 42.6 percent in the Lower Keys CCD, there is adequate, affordable rental opportunities available for all personnel to live off station. It is not anticipated that the additional demand for housing would lead to noticeable increases in housing costs. No significant impacts would be anticipated to housing from implementing Alternative 1 at NAS Key West.

4.7 Transportation

Transportation resources that are addressed in this EA focus on vehicle movements on the major and minor roadways that feed into the installation, security gates, and parking areas on NAS Key West. See Section 3.8 for the resource definition, regulatory setting, and the approach to analysis.

4.7.1 Affected Environment

The affected environment for transportation includes the network of roads used by aviation squadrons based at and visiting Boca Chica Airfield, operations personnel, tenants, contractors, and others for airfield duties and training exercises. As shown in Figure 4-4, the arterial roads providing access to Boca Chica Airfield include U.S. Route 1, Midway Avenue, and Saratoga Avenue. The Florida Department of Transportation maintains these arterial roads (U.S. Navy, 2011). U.S. Highway Route 1, between Stock Island and Marathon, has a Level of Service (LOS) C (Monroe County, 2015). A LOS of C indicates that there is a stable flow of traffic but the ability to maneuver through lanes is restricted and lane changes require more driver awareness. U.S. Highway Route 1 provides access to the two manned gates, a commercial entrance from Midway Avenue and the general gate from Saratoga Road (U.S. Navy, 2011). Traffic volumes at the gates are greatest during the morning and evening peak rush hours.

Figure 4-4 Naval Air Station Key West Local Road Network

The City of Key West has four public bus routes around Key West and Stock Island, and the Lower Keys Shuttle provides service along U.S. Highway Route 1 between Key West and Marathon. There is a shuttle stop at Saratoga Road near the entrance of Boca Chica Airfield.

4.7.2 Environmental Consequences

The LOS is a factor that is considered when evaluating impacts for vehicle transportation. Another factor is contribution of additional vehicle GHGs from the action. The former factor is evaluated here for U.S. Highway Route 1, Midway Avenue, and Saratoga Road. The latter factor, GHG emissions, was evaluated in section 4.3.2.2.

NAS Key West Potential Transportation Impacts:

- The No Action Alternative would not change any transportation networks or LOS on local NAS Key West roadways.
- Alternative 1: Construction vehicles and equipment would use the commercial entrance on Midway Avenue, about 1,500 feet from its intersection with U.S. Highway Route 1. This distance from the highway would avoid congestion or traffic slow down on U.S. Highway Route 1 during construction.
- Alternative 1: Personnel traveling to and from the station would not cause the LOS on U.S. Highway Route 1 or Saratoga Road to deteriorate; there is existing capacity for the roads to support an increase of commuting personnel. However, there may be congestion at the Main Gate during the peak morning and evening rush hours.

4.7.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to roadway LOS. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

4.7.2.2 Alternative 1: Naval Air Station Key West, Florida

The affected environment includes U.S. Highway Route 1, Midway Avenue (Commercial Gate), and Saratoga Road (Main Gate). During construction, vehicles and equipment would use the Commercial Gate on Midway Avenue. This road branches south of U.S. Highway Route 1, and goes about 1,500 feet before reaching the gate. Therefore, sufficient space is available to accommodate construction equipment entering and exiting the air station. The distance of this gate from traffic flow on U.S. Highway Route 1 would preclude significant impacts to the LOS on the highway from construction vehicles and equipment (see Figure 4-4).

Once operational, Triton UAS personnel would use the Main Gate at Saratoga Road. There are significant merge and entry lanes to the gate and access lanes to ease entry and exit onto U.S. Highway Route 1. Under Alternative 1, there may be minor congestion at the Main Gate during peak morning and evening rush hours. However, there is sufficient room on the Saratoga Avenue entry ramps to support this increase in traffic and potential for congestion at the gate. There also is a sufficient length of roads from U.S. Highway Route 1 to the Main Gate to avoid traffic congestion or backups on the highway. Therefore, it is not anticipated that traffic would exceed the ability of the road network to support Alternative 1. In summary, implementing Alternative 1 at NAS Key West would result in minor impacts to transportation.

4.8 Hazardous Materials and Wastes

This section discusses hazardous materials, hazardous wastes, special hazards, and Defense Environmental Restoration Program (DERP) sites. See Section 3.9 for the resource definition, regulatory setting, and the approach to analysis.

4.8.1 Affected Environment

The affected environment for hazardous materials, hazardous wastes, special hazards, and DERP sites consists of the area proposed for Triton UAS construction and operations at Boca Chica Airfield.

4.8.1.1 Hazardous Materials

Hazardous materials are used at NAS Key West for aircraft operations and maintenance and ground service and support equipment. Types of hazardous substances found on station include solvents; batteries; hexavalent chromium (alodine), paints, paint thinners/strippers, and their contaminated media (filters, rags, rollers, wastewater, plastic and glass bead blast media); antifreeze; hydraulic fluid; petroleum, oil, and lubricants and petroleum, oil, and lubricant-contaminated media (rags and filters); and x-ray effluent, including silver recovery (U.S. Navy, 2013b). Hazardous materials are managed by the NAS Key West Occupational Safety and Health Office (OSH) through the regulations and procedures described in the Hazardous Materials Control and Management portion of the *NAS Key West Occupational Safety and Health Manual* (U.S. Navy, 2005) and *Hazardous Waste Management Plan* (U.S. Navy, 2013b).

4.8.1.2 Hazardous Wastes

Hazardous wastes include solid wastes that are regulated as hazardous based on either direct listing by USEPA or characteristics such as ignitability, reactivity, corrosivity, and toxicity, as well as those contaminants present in environmental media (e.g., soil or groundwater). NAS Key West is regulated as a large-quantity (i.e., over 2,205 pounds [1,000 kilograms] per month) hazardous waste generator under the Resource Conservation and Recovery Act (RCRA). Before transport off site, hazardous wastes are collected at the Hazardous Waste Storage Facility (Building A4078) (U.S. Navy, 2013b). There are numerous Hazardous Waste Storage Areas (less than 90-day satellite accumulation areas) on NAS Key West operated by various air station departments and tenant commands. As sufficient volume of waste accumulates or the designated hold time expires, the hazardous waste at the accumulation sites is transported to the Hazardous Waste Storage Facility and then collected and disposed by permitted contractors.

4.8.1.3 Special Hazards (Asbestos-Containing Materials, Lead Based Paint, Polychlorinated Biphenyls)

The NAS Key West OSH administers the Asbestos Control Program, which provides guidance for the identification of asbestos-containing material (ACM). The Environmental Division provides guidance for the management of asbestos-containing wastes. The OSH also administers the Lead Control Program, which provides guidance for the abatement/minimization of environmental and occupational lead risks. The Environmental Division provides guidance for the management of lead wastes. All older buildings are screened for lead-based paint (LBP) on an as-needed basis prior to renovation, reconstruction, or demolition activities as required by Navy policy and USEPA directive. Congress banned the manufacture and use of polychlorinated biphenyls (PCB) in 1979 and cleanup actions are regulated through Toxic Substances Control Act. Although materials may be screened for PCB contamination prior to disposal, NAS Key West has no known PCB materials onsite and is considered “PCB free” (U.S. Navy, 2013b). Because none of the facilities proposed for demolition contain ACM or LBP, and the installation is PCB free, this facet of the resource analysis is not examined further.

4.8.1.4 Defense Environmental Restoration Program

Environmental restoration sites at Boca Chica Airfield include nine RCRA Solid Waste Management Units (SWMU), four Installation Restoration Program Sites, two Fuel Remediation Sites, and one possible leaking underground-storage tank site. NAS Key West has identified 15 Military Munitions Restoration Program sites (U.S. Navy, 2013b).

4.8.2 Environmental Consequences

This section analyzes impacts related to hazardous materials, hazardous waste, special hazards, and DERP sites and the potential for these substances to be introduced into the environment during the course of construction/demolition activities or during Triton UAS operations and maintenance.

NAS Key West Potential Hazardous Material and Waste Impacts:

- The No Action Alternative would not change any hazardous materials or wastes, special hazards, or DERP sites at NAS Key West.
- Alternative 1: Construction debris would be categorized and disposed according to federal, state, and local requirements.
- Alternative 1: Once operational, no new hazardous materials would be introduced to cause significant impacts.
- Alternative 1: NAS Key West's status as a large quantity hazardous waste generator would not change.
- Alternative 1: Special hazards would be handled according to established NAS Key West procedures.
- Alternative 1: No DERP sites would be affected.

4.8.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no changes associated with hazardous materials and wastes, special hazards, or DERP sites. Therefore, no changes in hazardous materials or wastes, special hazards, or DERP sites at NAS Key West with implementation of the No Action Alternative.

4.8.2.2 Alternative 1: Naval Air Station Key West, Florida

Hazardous Materials and Wastes

Construction, demolition, and renovation activities would require the use of certain hazardous materials (e.g., paints, welding gases, solvents, preservatives, sealants). It is anticipated that the quantity of products containing hazardous materials used for construction and demolition activities would be minimal and their use would be of short duration. All hazardous wastes generated by construction and demolition activities would be handled under the existing RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel. Therefore, no significant impacts from hazardous materials or waste would be expected by construction, demolition, or renovation activities.

Once home based, the maintenance of the Triton UAS would require the use of various hazardous materials. JP-5 fuel is currently used and stored at NAS Key West in aboveground storage tanks. JP-5 fuel to support Triton UAS would be additive and not represent a new waste stream at NAS Key West. It is anticipated that the quantity of products containing hazardous materials used to support Triton UAS

flight operations and maintenance activities would be minimal. The quantity of hazardous wastes generated from maintenance activities would be minor and would not be expected to exceed the capacities of existing hazardous waste disposal facilities. All hazardous materials and wastes would be managed in accordance with the installation's Hazardous Materials Management Plan and Hazardous Wastes Management Plan. Therefore, no significant impacts would be expected to hazardous materials or waste from maintenance activities or Triton UAS flight operations.

Figure 4-5 Defense Environmental Restoration Program Sites on Boca Chica Airfield

Special Hazards (Asbestos Containing Materials, Lead Based Paint, Polychlorinated Biphenyls)

Any structures proposed for demolition would be inspected for ACM and LBP according to established NAS Key West procedures. All ACM would be properly removed and disposed of prior to or during demolition in accordance with 40 CFR part 61 and established NAS Key West procedures. Any LBP would be managed and disposed of in accordance with federal and state requirements and established NAS Key West procedures. Therefore, no significant impacts to special hazards would occur from implementing Alternative 1, NAS Key West.

Defense Environmental Restoration Program

Construction would not occur on any DERP sites; however, there are two SWMUs adjacent to the proposed Triton UAS facilities (Figure 4-5). The first is a former open disposal area (SWMU 1) with petroleum, oil, and lubricant contamination; it was remediated and routinely monitored. The second site, a former fire-fighting area (SWMU 3), had the potential for petroleum, oil, and lubricant contamination but was remediated and closed. Therefore, no significant impacts to DERP sites are anticipated if Alternative 1 at NAS Key West, were implemented.

5 Alternative 1: Naval Air Station Key West, Florida Cumulative Impacts

5 ALTERNATIVE 1: NAVAL AIR STATION KEY WEST, FLORIDA CUMULATIVE IMPACTS

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

Cumulative effects could result from individually minor, but collectively significant actions that take place over time. Accordingly, a cumulative effects analysis identifies and defines the scope of other actions and their interrelationship with the alternatives if there is an overlap in space and time. Cumulative effects are most likely to occur when there is an overlapping geographic location and a coincidental or sequential timing of events.

For the purposes of this analysis, the temporal span of Alternative 1 is considered the time during which construction of Triton UAS facilities would occur to the time when all Triton UAS aircraft are operating at the installation (i.e., between 2017 and 2023). For most resources, the spatial area for consideration of cumulative effects is limited to the installation on which an activity would occur, which would include Boca Chica Airfield. Past actions are those actions, and their associated impacts, that occurred within the geographical extent of cumulative effects that have shaped the current environmental conditions of the study area. CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions (Connaughton, 2005). The effects of past actions are now part of the existing environment and are included in the affected environment described in Chapter 4. However, recent past actions with continuing ongoing effects that are germane to cumulative impacts are discussed in respect to present and reasonably foreseeable future actions.

5.1 Past, Present, and Reasonably Foreseeable Actions

Based on a review of past, present, and reasonably foreseeable future actions within the study area of Alternative 1 at NAS Key West, it was determined that several actions should be considered when analyzing potential cumulative impacts.

5.1.1 Past Actions

NAS Key West Airfield Operations. This Environmental Impact Statement (EIS) identified and evaluated the potential environmental effects that would result from airfield training operations at NAS Key West. The Record of Decision identified Alternative 2 as the preferred alternative. This alternative included airfield operations that would continue to be maintained at approximately 52,000 annual operations,

legacy aircraft would gradually transition to next generation aircraft, and existing facilities would be altered to meet requirements for next generation aircraft (U.S. Navy, 2013a).

Monroe County 2010 Comprehensive Plan, updated in 2014, includes the following land use objectives and policies relevant to NAS Key West.

- Objective 108.2 states that Monroe County shall consider the protection of public health, safety, and welfare as a principal objective of compatible land use planning on lands adjacent to or closely proximate to the Boca Chica Airfield.
- Policy 501.5.4 states that Monroe County shall coordinate expansions and operation of Key West International Airport with the Navy.
- Policy 501.5.5 states that Monroe County shall seek joint use of the Boca Chica Naval Air Station or its preservation as a public airport if the Navy ceases to operate the base.
- Policy 1201.8.3 states that Monroe County shall continue to coordinate with the Navy to determine the potential for use of Navy-owned lands for activity-based and/or resource-based neighborhood and community parks (Monroe County, 2014).

Restoration of Clear Zones and Stormwater Drainage Systems at Boca Chica Field. In 2007, an EIS was completed to address corrective measures needed to meet airfield safety, clearance criteria. The EIS addressed both restoration and long-term maintenance at various locations at Boca Chica Field. Maintenance measures include trimming and/or removal of vegetation that protrudes into vertically controlled airfield surfaces or those that should not be present in laterally controlled surfaces, clearing and grubbing, grading, filling low areas, replanting some areas with native saltmarsh vegetation, and supplemental improvements to drainage conditions. Restoration methods addressed include the use of hand-clearing or mechanized methods (i.e., traditional construction equipment or specialized equipment). Maintenance methods addressed include mowing, hand clearing, and prescribed burning where feasible (U.S. Navy, 2007b).

5.1.2 Present and Reasonably Foreseeable Actions

Navy Atlantic Fleet Training and Testing Phase II. The Navy is preparing an EIS/Overseas EIS (OEIS) to evaluate the potential environmental effects associated with military readiness training and research, development, testing, and evaluation activities conducted within the Atlantic Fleet Training and Testing (AFTT) study area. The AFTT study area includes existing range complexes, operating areas, and test ranges along the East Coast of the U.S., the Gulf of Mexico, and select pier side locations, port transit channels, and the lower Chesapeake Bay. The EIS/OEIS is being prepared to renew and combine current regulatory permits and authorizations; address evolving training and testing requirements; and obtain those permits and authorizations necessary to support force structure changes and emerging and future training and testing requirements, including those associated with the introduction of new ships, aircraft, and weapons systems. The AFTT EIS/OEIS effort will address events that occur within the existing at-sea Key West Range Complex.

Naval Air Station Key West Improvement Projects. NAS Key West underwent a master planning effort to update previous plans to efficiently respond to current and anticipated (i.e., for the next 25 years) mission and tenant requirements (U.S. Navy, 2011). The Master Plan identified the need to replace outdated or inefficient buildings with new buildings across NAS Key West facilities. At Boca Chica Airfield, these improvements include facility demolition, new construction, and renovations as well as roadway realignments in the main base and air training areas, north of the runways.

Key West International Airport Operations. The airport is located within the city limits of Key West, and is owned and operated by Monroe County. Forecasts for enplanement (i.e., the number of passengers boarding commercial airlines) predict that by 2019, there will be 272,117 enplanements compared to the 383,776 recorded in 2014 (FAA, 2016). This represents a projected reduction in passengers of 29 percent.

Open Tourism/Trade between the U.S. and Cuba. Currently, general tourism is prohibited for Americans, but travel restrictions have eased to allow some travel from select U.S. cities to Cuba by Cuban-Americans visiting relatives or persons who possess a federal license to visit Cuba. Federal authorization was granted to Key West in October 2011 and flights travel between Key West and Havana twice a week; however, authorization from the Cuban government is pending for ferry access. Should unrestricted tourism or trade between the U.S. and Cuba normalize, it is possible that airspace use by commercial aircraft between the two nations would increase. Although it is unknown when this could occur, this cumulative impact analysis assumes unrestricted tourism or trade is reasonably foreseeable in the future.

5.2 Resource Analysis

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources, quantifiable data are not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA. Following review of past, present, and reasonably foreseeable projects, the only action that would have the potential to interact with Alternative 1 would be improvement projects planned on NAS Key West at Boca Chica Airfield. After evaluation of the actions that interrelate in geography and time, the following resources would most likely be affected by Alternative 1 and are carried forward for cumulative impact analysis: noise, air quality, biological resources, water resources, socioeconomics, transportation, and hazardous materials and wastes. As such, no cumulative effects from Alternative 1 at NAS Key West, when considered with past, present, and reasonably foreseeable actions, are anticipated for public health and safety and cultural resources. These resources are therefore not carried forward for more detailed cumulative impact analyses under Alternative 1 at NAS Key West.

5.2.1 Noise

The noise impacts from the Alternative 1 and station improvements consist of noise generated from construction and demolition activities and Triton UAS flight operations. The improvement projects planned at Boca Chica Airfield would include the use of heavy equipment for site preparation and development that would result in increased noise levels within the immediate area. However, noise level increases would be temporary and typical of standard construction activities. Overall, construction activities at and within the vicinity of Boca Chica Airfield would collectively increase noise levels in the area temporarily, but variations in the timing of cumulative projects, and the relatively short duration of these noise effects, would moderate impacts over space and time. These negligible changes in behavior are not expected to differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Once construction is complete, abundance and frequency of wildlife occurring in the project area are expected to return to prior levels.

Cumulatively, present and reasonably foreseeable aircraft operations were accounted for in the Airfield Operations at NAS Key West (U.S. Navy, 2013a). The 52,000 operations represent what is anticipated in

terms of future activities (see Section 4.1.1). Noise generated by activities outside of Boca Chica Airfield, such as boat traffic, aircraft operations, vehicle traffic, and general ambient sounds generated by horns, sirens, and construction would continue as found under existing conditions and would contribute to the overall acoustic environment. However, when considered along with Alternative 1, the noise generated by these sources would not introduce significant noise levels to affect public health. Cumulatively, no significant impacts to the acoustic environment would be expected under Alternative 1 at NAS Key West.

5.2.2 Air Quality

Construction activities related to Alternative 1, improvement projects on NAS Key West, and personnel increases would generate air pollutant and GHG emissions (see Section 4.3.2.2). Construction-related activities would include the use of heavy equipment for site preparation and development that would result in criteria pollutant and GHG emissions within the immediate area. However, air emissions would be temporary and typical of standard construction activities. Overall, construction activities at and within the vicinity of the airfield would collectively increase air emissions and GHGs in the area temporarily, but variations in the timing of cumulative projects, and the relatively short duration of project effects, would moderate impacts over space and time.

Cumulatively, construction-related air emissions would be a small percentage of overall air emissions in the Southeast Florida AQCR. These cumulative emissions would not change the attainment status of the AQCR or introduce a significant increase in GHG emissions. Therefore, the cumulative effect of these construction-related actions would not result in significant, cumulative impacts to air quality.

Once the home basing is completed, Triton UAS operations and commuting personnel would contribute less than 1 percent of criteria pollutants in Monroe County (see Table 4-5). When considered cumulatively with present and foreseeable aircraft operations, the percent contribution of emissions would remain below levels that would change the attainment status within the AQCR.

Emissions of GHGs from these cumulative activities alone would not cause global warming that could lead to climate change. However, these emissions would increase the atmosphere's concentration of GHGs and could incrementally contribute to global warming.

5.2.3 Biological Resources

Vegetation

Construction and demolition activities associated with Alternative 1 and NAS Key West improvement projects would occur primarily in developed or already disturbed areas so when considered cumulatively, would not significantly affect vegetation. As presented in Section 4.4.2.2, sea level rise will increase the potential for tidal swamps to expand and associated mangrove vegetation to encroach onto the installation; thus changing freshwater wetland habitats. Impacts to implementing Alternative 1 due to climate change could include inundation of all vegetation on NAS Key West and the need to either relocate or close the installation. Once operational, it is not anticipated that Triton UAS and present and reasonably foreseeable aircraft operations would cumulatively affect vegetation on NAS Key West.

Wildlife

Construction and demolition activities associated with Alternative 1 and NAS Key West improvement projects would generate temporary increases in noise levels, primarily in highly disturbed and developed portions of Boca Chica Airfield. Noise created during construction and demolition activities may result in

temporary behavioral disturbance to wildlife, mostly limited to avoidance of the immediate area. However, these negligible changes in behavior are not expected to differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Once construction is complete, abundance and frequency of wildlife occurring in the project area are expected to return to prior levels. Additionally, the projects would occur in areas where wildlife may have habituated to noisy airfield activities.

When the current level of noise generated by air traffic, and the Triton UAS's relatively low SELs (i.e., the Triton UAS would introduce no more than 1 dB DNL to the noise environment), are considered along with the noise generated cars, boats, and horns, cumulative effects to wildlife in the vicinity of the project area would not be considered significant under Alternative 1, NAS Key West.

To minimize direct effects to wildlife, continued adherence to BASH management projects, which include habitat modification, grassland management, wetlands management, wildlife exclusion measures, avian dispersal measures, and humane lethal control measures, would reduce the habitat attractiveness as foraging, resting, or nesting areas for birds. Other periodic BASH management projects, such as exclusion devices, removal of abandoned structures, and fence repair, would specifically discourage the presence of wildlife in close proximity to the airfield and avoid significant, cumulative impacts.

Special Status Species

Endangered Species Act. Under Alternative 1, when considered with past, present, and reasonably foreseeable actions, no cumulative, significant impacts are anticipated to federally listed species. Continued adherence to protective measures identified in existing BOs (USFWS Log #4-1-92-333 and SCC 41420-2006-F-0297) would ensure that current and reasonably foreseeable projects would not significantly affect federally listed species (see Section 4.4.2.2).

Other Special Status Species

Bald Eagle. Bald eagles are regularly observed in low numbers around NAS Key West, but no nests have been documented since 2012. There is no suitable nesting habitat in the project area and foraging habitat is of marginal value compared to other areas of the Florida Keys. Therefore, Triton UAS operations, along with all other aircraft operations at the station would likely have no effects to Bald Eagles. No significant, cumulative harm or incidental takes of bald eagles are anticipated when Alternative 1 is considered along with anticipated improvement projects at NAS Key West.

Migratory Bird Treaty Act. As mentioned in Section 4.4.2.2, potential impacts to migratory birds would be avoided by conducting a site survey of the proposed construction areas prior to commencement of construction activities for future improvement projects to ensure the absence of migratory birds or by conducting construction activities outside of the migratory bird-nesting season. Once the Triton UAS is operational, continued participation in Partners in Flight, observance of conservation and protective measures identified in the NAS Key West INRMP would be used to ensure that no violation of the MBTA or EO 13186 would occur from implementing Alternative 1 along with other present and reasonably foreseeable actions. No significant, cumulative harm or incidental takes of MBTA species are anticipated.

Climate Change

In terms of climate change effects to wildlife species, there could be increases in sea levels that could cause saltwater intrusion into the freshwater system forcing some species to relocate or die. Warmer springs can also lead to changes in the timing of migration, breeding, and food availability. As temperatures increase, habitat ranges may also shift and thus disturb the current state of the ecosystem (USEPA, 2016d). Impacts to implementing Alternative 1 due to climate change could include inundation of NAS Key West due to sea level rise and movement of wildlife off the Lower Keys.

Long-term climate change effects to all special status species include increased sea levels that could cause saltwater intrusion into the freshwater system forcing some species such as sea turtles and Lower Keys Marsh Rabbit to relocate or die. Warmer springs can also lead to changes in the timing of migration, breeding, and food availability for nesting sea turtles, bald eagles, and migratory birds. As temperatures increase, habitat ranges may also shift and thus disturb the current state of the ecosystem (USEPA, 2016d).

5.2.4 Water Resources

Ground Water

Construction and demolition impacts to ground water from Alternative 1 and station improvements would not extend below ground surface to a depth that would affect the underlying aquifer. Although fuel or other chemicals could be spilled during construction, demolition, and renovation activities, implementation of the required SPCC Plan and immediate cleanup of any spills would prevent any infiltration into groundwater resources. Cumulatively, Alternative 1 and countywide growth would increase the population and the demand for groundwater resources. Alternative 1 would result in 914 personnel and dependents, and countywide population is estimated to grow by 0.5 percent by 2020. It is anticipated that there is adequate water supply in terms of quantity within the Lower Keys to accommodate forecasted growth. Therefore, no significant, cumulative impacts to groundwater resources are anticipated.

Surface Water

Construction and demolition activities associated with Alternative 1 and station improvement projects, could result in a slight cumulative increase runoff and associated turbidity. Potential impacts from an increase in turbidity would be minimized with implementation of practices such as wetting of soils, silt fencing, and detention basins and adherence to erosion and stormwater management practices, as determined by the Navy, to contain soil and in runoff on the project area. Construction and demolition activities from Alternative 1 and present and foreseeable projects are not anticipated to degrade the water quality or affect beneficial uses of surface water or groundwater resources. No significant cumulative impacts are anticipated resulting from Triton UAS operations and other present or foreseeable projects.

Wetlands

Alternative 1 would impact an estimated 3 acres of wetland habitat if this alternative were implemented; it is not anticipated that planned improvement projects on the station would affect wetlands. Therefore, no significant, cumulative impacts are anticipated by implementing Alternative 1 and other present or foreseeable projects. However, climate change will introduce hotter weather, which can bring on drought that can cause coastal water resources such as wetlands to become more saline as freshwater is reduced.

Floodplains

Construction and renovation activities on NAS Key West, associated with Alternative 1 and station improvements, are within the 100- and 500-year floodplain. This would result in cumulative impacts to the floodplain. There is no practicable alternative, however, because the entire installation is located in the floodplain. In accordance with EOs 11988 and 13690, and DoD *Memorandum for Floodplain Management on Department of Defense Installations* (February 2014), the Navy will identify in any new construction designs or for renovations of existing installation facilities exceeding $7.5 million, the flood mitigation measures that will be incorporated to minimize inundation effects and notify the public as to why there were no practicable alternative to such development in the floodplain. Cumulative impacts to the floodplain would be expected.

Climate Change

For groundwater, climate change will produce increases in sea levels, with saltwater moving into freshwater areas and affecting water quality. This could limit potable water availability to populations living in the Lower Keys area. For surface waters, the USEPA predicts that long-term, climate change will induce increased temperatures, reduce water supplies, increase water evaporation, and hotter weather will increase demand for water from humans and animals located in the Lower Keys. In terms of wetlands and floodplains under climate change, stormwater and waste water systems will face risks from rising sea levels and the damaging impacts of storm surges (USEPA, 2016e). Floodplains may also expand and thus expose more infrastructure to increased episodes of inundation. If this were to occur, then NAS Key West would likely be inundated.

5.2.5 Socioeconomics

Under Alternative 1, NAS Key West, no significant impacts to the population and employment and income would occur when considered with future improvement projects on the installation. Other than a temporary beneficial input into the local economy generated by new construction, no significant, cumulative impacts are anticipated to employment and income. In terms of population, Alternative 1 and NAS Key West improvement projects would not perceptibly change population numbers in the Lower Keys or Key West CCDs. Housing would not be affected from other station improvements; therefore, significant effects would not occur by implementing Alternative 1 at NAS Key West.

5.2.6 Transportation

Construction, demolition, and renovations for Alternative 1 and future station improvements would entail movement of heavy equipment and construction workers on U.S. Highway Route 1 and at the Midway Avenue Gate (the commercial gate). When considered cumulatively these activities could cause temporary congestion at the commercial gate and negligible increases in traffic. However, this increased traffic would not degrade the LOS on U.S. Highway Route 1 or introduce significant congestion at the main gate since the commercial gate is located 1,500 feet from the intersection with U.S. Highway Route 1 and separate from the Main Gate on Saratoga Road. Planned future projects would better on-station transportation because they involve intersection improvements, road realignments, and increased parking areas. Therefore, no significant, cumulative impacts are anticipated to transportation.

5.2.7 Hazardous Materials and Wastes

Construction, demolition, and renovation activities under Alternative 1 and station improvement projects would require the use of certain hazardous materials (e.g., paints, welding gases, solvents, preservatives, and sealants). However, all hazardous wastes generated would be handled under the

existing RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel. Therefore, no significant, cumulative impacts to hazardous materials or waste would be expected from construction, demolition, or renovation activities.

No special hazards such as ACM, LBP, or PCPs are associated with Alternative 1, but other station improvements could involve these special hazards. There would be no significant, cumulative impacts, however, from special hazards because of continued adherence to all Navy policies and USEPA directives associated with handling and disposing of these substances.

Alternative 1 would not impact any DERP sites; however, these sites could be affected by future station improvement projects. These potential significant impacts would be minimized to less than significant through continued adherence to the station's Environmental Restoration Program to identify, investigate, and clean up these hazardous waste disposal or release sites.

6 Alternative 2: Naval Station Mayport, Florida Affected Environment and Environmental Consequences

6 ALTERNATIVE 2: NAVAL STATION MAYPORT, FLORIDA AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter presents a description of the environmental resources and baseline conditions that exist along with the potential environmental consequences that could occur by implementing Alternative 2 at Naval Station (NS) Mayport.

6.0 Scope of Impact Analysis

All potentially relevant environmental resource areas were initially considered for analysis in this Environmental Assessment (EA). In compliance with National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ), and 32 Code of Federal Regulations (CFR) part 775 requirements, the discussion of the affected environment (i.e., baseline conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

"Significantly," as used in NEPA, requires consideration of both context and intensity. Context means that the significance of an action must be analyzed using several factors such as society as a whole (e.g., human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of a proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant (40 CFR part 1508.27). Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be in order to be considered significant. Likewise, the less sensitive the context, the potential impact would need to be more intense to be significant.

The following identifies the resource areas whose impacts were considered negligible or non-existent; therefore, they were not analyzed in detail for Alternative 2 at NS Mayport. These resources are airfield and airspace management, land use, infrastructure and utilities, recreation, community/emergency services, environmental justice, visual/aesthetic resources, and soils and topography.

Airfield and Airspace Management: Construction activities associated with this alternative would occur adjacent to the runway; however, these activities would not conflict or restrict existing airfield operations through management by Air Traffic Control. Construction and equipment would use existing roads to access the project site and construction would not block runway use. The addition of approximately five Triton unmanned aircraft systems (UAS) flight operations per day would equate to a maximum of 1,825 aircraft operations annually (based on 365 flying days), which would represent an approximate 1.7 percent increase for existing annual operations at the airfield. Currently, this airfield annually supports more than 103,000 flight operations (i.e., takeoffs, landings, and touch-and-goes). A 1.7-percent increase would not impair the ability of the Radar Air Traffic Control Facility to coordinate flights within the controlled airspace associated with the airfield. Triton UAS aircraft would be under pilot control at all times and with adherence to existing flight rules, and continued coordination with regional Air Traffic Control (ATC), would preclude conflicts with local air traffic. Alternative 2 would not involve the creation or modification of any special use airspace. Triton UAS flight operations would be conducted in existing controlled airspace around the NS Mayport airfield and upon departure; fly within

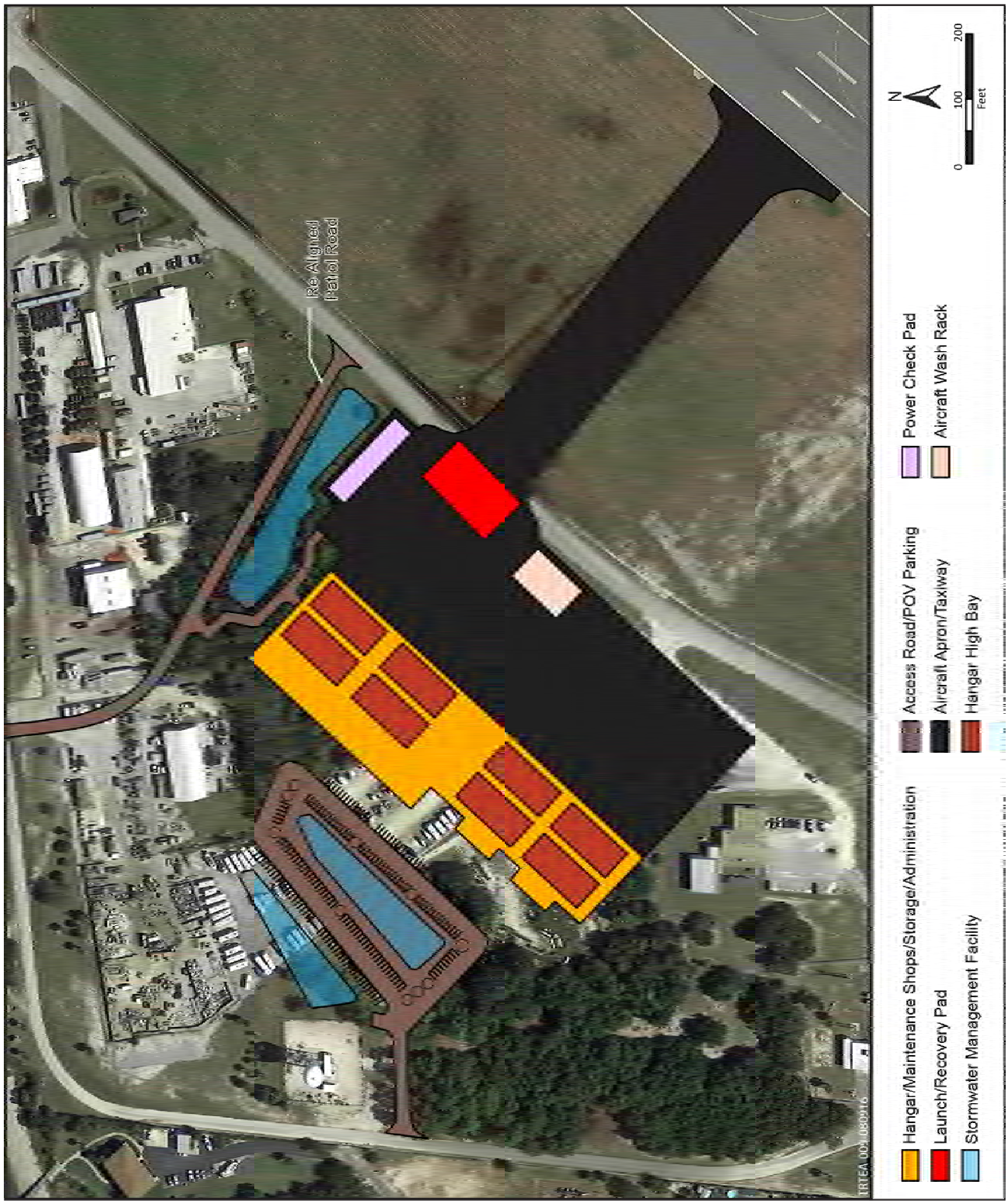


Figure 6-1 Naval Station Mayport Proposed Construction

restricted airspace, travel over water, and climb to a final cruise altitude of approximately 58,000 feet above mean sea level. The Navy would obtain the appropriate Certificate of Authorization from the Federal Aviation Administration (FAA) before Triton UAS flight operations would be conducted at the station. Therefore, no impacts to airfield or airspace management would be expected and no further analysis of this resource is carried forward under Alternative 2 at NS Mayport.

Land Use: The proposed construction site is located adjacent to the airfield and primary land uses comprise the runway, as well as industrial and administrative support facilities. The associated safety clear zones include large expanses of mowed apron areas, open water lagoons, and wetland habitats, some of which support federally protected species (e.g., wood stork). In addition to airfield operations, NS Mayport is home to numerous Navy commands, provides maintenance and support services to the southeast Navy fleet; and contains a turning basin with numerous wharves and ship berths. To the east of the airfield, the station also supports numerous fitness facilities, two recreational vehicle parks, a golf course, and a stretch of undeveloped beach. There would be negligible changes to on-station land uses. The existing long-term storage area for recreational vehicles and boats would be developed to support the Triton UAS mission; however, this area is currently designated for utilities and maintenance uses (NS Mayport, 2014) and a land use designation change to operations would not introduce significant land use impacts. Additionally, a forested area on the southside of the runway (designated by NS Mayport as a utilities/maintenance area [NS Mayport, 2014]) would be developed to support the relocated long-term storage area. These changes would be consistent with land uses found on a military installation. Outside of station boundaries, neither construction nor operations would affect land use designations (i.e., construction would not affect areas off station and projected noise levels would not perceptibly change from existing conditions). Therefore, no impacts to land uses would be expected and no further analysis of this resource is carried forward under Alternative 2 at NS Mayport.

Infrastructure and Utilities: In terms of electrical, water, and natural gas supply, the station is well able to support the addition of 400 personnel proposed under this alternative (United States [U.S.] Navy, 2013a). Currently, the station is operating at below capacity so a 1.7 percent increase in the Jacksonville Beaches or 0.1 percent increase in Duval County's population would not strain the ability of these utilities to support this modest population growth on the station or in the local community. Therefore, only negligible impacts to infrastructure or utilities would be expected and no further analysis is carried forward.

Naval Station Mayport, however, is currently subject to, and in compliance with, a Consent Order from the Florida Department of Environmental Protection (FDEP) relating to discharges from its wastewater treatment facility (WWTF). Pursuant to that consent order, a new WWTF will be constructed on the same site as the existing WWTF and be operational by September 1, 2020. The addition of the Triton UAS mission, to include personnel and their families, would not significantly impact current or future WWTF operations at NS Mayport. Personnel numbers at NS Mayport have decreased over the past 10 years and the existing system was designed to support a higher capacity of operations. Addition of about 400 people working at the installation (no one is anticipated to live on base) would not represent a capacity issue at the current WWTF.

Recreation: There are no recreational resources located at or adjacent to the proposed construction site at NS Mayport. Furthermore, this alternative would not involve any activities that would alter existing recreational areas (e.g., the golf course) or impact recreational activities along the beach. Triton UAS-generated noise levels would increase no more than 1 decibel (dB), Day-Night Average Sound Level (DNL) therefore, would not introduce noise levels that would be perceptibly different than the existing

acoustic environment if Alternative 2, NS Mayport were implemented. Negligible impacts, therefore, would be expected to recreational resources and detailed examination is not carried forward for this resource under Alternative 2 at NS Mayport.

Community/Emergency Services: *Educational Services.* Duval County supports 197 public education institutions. It is estimated that Alternative 2, NS Mayport, would add 184 more school-aged children to the Duval County Public Schools (Department of Defense [DoD], 2014). This would represent a 0.1-percent increase in the school district's 2016 enrollment of 128,702 (Duval County Public Schools [DCPS], 2016). Currently, district schools are at less than 75 percent capacity (DCPS, 2016) therefore, a less than 1-percent increase in school-aged children would introduce only negligible impacts to the DCPS.

Health Services. There are 44 hospitals serving the 1 million population found in Duval County, of which 10 are within 25 miles of the station. On NS Mayport, the Naval Branch Health Clinic provides health services to active duty personnel, their dependents, and veterans. Naval Hospital Jacksonville, about 50 miles away, provides urgent, preventive, and routine in- and out-patient services. There is existing capacity in both civilian and naval facilities to support the anticipated increase in population associated with Alternative 2 at NS Mayport; therefore, no impacts are anticipated to health services.

Emergency Services. NS Mayport supports two fire and emergency services departments. In addition, within 10 miles of NS Mayport, there are seven Jacksonville Fire and Rescue Departments and three Police Department stations. Under Alternative 2, an estimated 914 military, civil service personnel, and their dependents would move to the greater Jacksonville Beaches area. This represents about a 1.7-percent increase in the area population, and a 0.1-percent increase in Duval County population. This negligible addition would not constrain the ability of local fire and police to respond to emergencies; the current average response time is 5 minutes and this would not be affected by this negligible population increase. In the event that a hurricane evacuation was required, personnel and their dependents would operate under existing plans and procedures to ensure their safety. Triton UAS and other aircraft would be moved and flown to a safe location outside of the hurricane's path. Therefore, no impacts are anticipated to emergency response times and services.

Accordingly, community/emergency services for Alternative 2 at NS Mayport are not carried forward for detailed examination.

Environmental Justice: Construction, demolition, and renovation activities associated with Alternative 2 would occur within the NS Mayport airfield. Noise, safety, and health conditions affecting low-income and minority populations, as well as the elderly and children would not change perceptibly from those currently found at and around the station. Additionally, noise levels generated by the Triton UAS would not perceptibly change from existing conditions (this aircraft would increase airfield operations up to five per day). This alternative would not involve any activities (e.g., noise, air emissions, health, or safety hazards) that would disproportionately affect minority or low-income populations, children, or the elderly (per Executive Order [EO] 12898, *Environmental Justice for Low Income and Minority Populations* and EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*). Therefore, environmental justice for Alternative 2 at NS Mayport is not carried forward for detailed examination.

Visual/Aesthetic Resources: Visually, construction and demolition activities associated with this alternative would result in facilities that would be consistent with the current characteristic features of a military airfield and landscape of the station. The design of new structures would adhere to Navy building guidelines and standards. Once operational, the introduction of Triton UAS aircraft would not

change the visual aspect or aesthetic values at an already active military airfield. Therefore, no impacts to visual or aesthetic resources would be expected and this resource category, for Alternative 2 at NS Mayport, is not carried forward for detailed examination.

Soils and Topography: There are two soil types located in the areas proposed for construction—urban land and arents. Along the flight line, urban land consists of soils with no identifiable soil characteristics due to past development and natural drainage is variable, depending on adjacent soils. Arents soils, in the site proposed for the long-term storage relocation, are nearly level and commonly found in coastal settings. This soil unit is considered somewhat poorly drained but has a low frequency for flooding and ponding of water (Natural Resources Conservation Service, 1998). No prime farmland soils are mapped at the site, and no in-water construction would occur to produce marine sediments. Implementing best management practices to stabilize soils and control sedimentation during construction and demolition activities would minimize potential impacts from erosion and sedimentation into receiving water bodies. Construction and demolition activities associated with this alternative would not significantly alter the soils and topographic features of the station. Accordingly, soils and topography for Alternative 2 at NS Mayport are not carried forward for detailed examination.

6.1 Noise

This section discusses the existing ambient sound environment within and around NS Mayport (i.e., the affected environment) and the potential impacts home basing the Triton UAS would have on this environment. Refer to Section 3.1 for the resource definition and approach to analysis. Noise in relation to natural resources, including wildlife, is discussed in Section 6.4.

6.1.1 Affected Environment

The affected environment includes those areas and receptors exposed to noise generated at the NS Mayport airfield. The ambient sound environment at NS Mayport includes natural sources (e.g., wind, waves, and birds) and human-generated sources (e.g., aircraft, vehicles, ships, horns, and construction). Flight operations are the primary source of noise generated at the airfield. Existing conditions comprise those presented in the Air Installations Compatible Use Zones (AICUZ) study conducted in 2006 (U.S. Navy, 2007). The analysis done for the AICUZ study, and incorporated by reference herein, evaluated 103,000 annual operations. Using these data is justified because conditions have not changed since that time (i.e., no new aircraft or aircraft-related missions have been introduced). Historically, operations have fluctuated over the years from a high in calendar year 1993 with 156,885 to a low of 64,512 operations in 2014. These fluctuations were due to deployments, as well as a temporary move to Naval Air Station Jacksonville in 2014 when NS Mayport's runway was under refurbishment. Over the years, the H-60 Seahawk helicopters have dominated flight operations, contributing over 90 percent of total operations. Transient operations are conducted by FA-18s, C-12s, and T-45s. NS Mayport has one runway (05/23) that is 8,000 feet long by 200 feet wide and the air traffic control facility maintains control of its Class D airspace in a 5-nautical mile radius.

Table 6-1 presents the Sound Exposure Level (SEL) of commonly operated aircraft at the airfield. The SEL measurements assumed the aircraft are directly over the receptor and are presented at varying altitudes. The SEL provides the best representation of what people generally and immediately respond to when an aircraft flyover occurs. As indicated, the H-60 generates SEL of about 82.5 dB at an altitude of 1,000 feet above ground level (AGL), the probable altitude of the aircraft when it passes outside of the station's boundaries. The SELs for transient aircraft at the same altitude range from 79.3

dB for the C-12 to 113.5 dB for the FA-18C/D. In comparison, the Triton UAS creates an SEL of 82.7 at 1,000 feet AGL.

Table 6-1 Representative Sound Exposure Level for Common Aircraft Departures at Naval Station Mayport Airfield

Aircraft[1]	*In dB*		
	500 feet AGL	*1,000 feet AGL*	*2,000 feet AGL*
H-60	87.4	82.5	77.0
C-12	88.7	79.3	74.6
F-15	118.8	113.5	107.6
Triton UAS[2]	87.5	82.7	76.7

Source: SELCalc2 (U.S. Air Force, 2002).
Notes: [1]All modeled as departures in takeoff power engine setting.
[2]Modeled using a Cessna Citation X, which has the same basic Rolls-Royce AE 3007 engine as the Triton UAS. While the Triton UAS has a single engine, the Citation X has two engines so the SEL for the Citation X is approximately 3 dB greater than the Triton UAS but should share a similar frequency spectrum, making for a conservative surrogate.

6.1.2 Environmental Consequences

Analysis of potential noise impacts includes estimating likely noise levels from Alternative 2 and determining potential effects to the human and natural environment.

NS Mayport Potential Noise Impacts:

- The No Action Alternative would incur no changes to the noise environment on NS Mayport.
- Alternative 2: Construction noise would be short-term and would not affect areas outside of installation boundaries.
- Alternative 2: A less than 1 dB DNL increase in noise levels from Triton UAS operations would likely not be noticeable; therefore, negligible impacts to the acoustic environment.

6.1.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to existing noise levels. Therefore, no impacts to the noise environment would occur with implementation of the No Action Alternative.

6.1.2.2 Alternative 2: Naval Station Mayport, Florida

The affected environment for Alternative 2 includes those areas and receptors exposed to construction- and aircraft-generated noise at NS Mayport.

Construction Noise

Construction noise is generated by the use of heavy equipment on job sites and is generally short-term in duration (i.e., during specific times in the day and certain phases of renovation, demolition, and/or construction). Commonly, heavy equipment operation occurs sporadically throughout daytime hours. Table 6-2 provides a list of representative construction equipment and associated noise levels in dB, adjusted for the percent of time the equipment would typically be operated at full power at a construction site, from a distance of 50 feet. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment, which are typically impact devices (e.g., jackhammers). Under Alternative 2 at NS Mayport, noise impacts would vary based on the construction phase and by the specific task being undertaken (U.S. Environmental Protection Agency [USEPA], 1971). For instance, demolition and construction activities typically involve bulldozers and jack hammers; bulldozers, scrapers, backhoes, and trucks are used during excavation, land clearing, and grading; backhoes are involved in utility installation; and concrete mixers, pumps, saws, hammers, cranes, and forklifts are employed during building construction.

Table 6-2 Predicted Noise Levels for Construction Equipment

Equipment Description	*Actual Measured Maximum Sound Level (dB) at 50 feet*
Clearing and Grading	
Flat Bed Truck	74
Dump Truck	76
Roller	80
Bulldozer	82
Grader/Scraper	84
Excavation	
Front End Loader	79
Pneumatic Tools	85
Jackhammer	89
Building Construction	
Compressor (air)	78
Concrete Mixer Truck	79
Crane/Generator/Pump	81
Warning Horn	83
Chain Saw	84
Vibrating Hopper	87
Concrete Saw/Impact Hammer	90

Source: Federal Highway Administration [FHWA], 2006.

Typically, the dB level of a sound decreases (or attenuates) exponentially as the distance from the source increases. For a single point source, like a bulldozer, the sound level decreases by approximately 6 dB for each doubling of distance from the source where no other features such as vegetation, topography, or walls absorb or deflect the sound. For example, at 50 feet a bulldozer generates a noise level of 82 dB, at 500 feet this level would decrease by about 54 dB and generate noise levels that would not likely be distinguishable within the acoustic environment. Additionally, building walls can attenuate noise levels by 35 to 50 dB and windows from 25 to 35 dB (FHWA, 2011).

The nearest receptor is a cluster of homes along Broad Street, between Ocean Street and Patrol Road at 400 feet from the proposed construction site. Given this distance, the maximum noise level of a bulldozer would be about 42 dBA and would likely not be perceived by individuals around or in the homes. Therefore, no significant impacts are anticipated from construction-related noise if Alternative 2 at NS Mayport were implemented.

Operations Noise

The addition of approximately five Triton UAS flight operations per day would equate to 1,825 flight operations annually, which would represent a 1.7 percent increase in existing annual operations at NS Mayport. This percent increase would change noise levels by less than 1 dB. As presented in Section 3.1.1, a change of 3 dB is barely noticeable to the human ear (Berrendt et al., 1976); therefore, a less than 1-dB increase in DNL would likely not be noticeable. When compared to the H-60 helicopters based at NS Mayport, the Triton UAS has about the same SEL upon takeoff (see Table 6-1); however, it only arrives or departs the airfield five times per day, considerably less than existing rotary-wing airfield operations.

Potential impacts to the noise environment from Triton UAS flight operations would be negligible, as the Triton UAS would spend relatively little time operating in the airfield environment. The Triton UAS would conduct straight-in approaches and straight-out departures, would not conduct any closed-pattern operations, and would primarily depart and arrive over the ocean. The Triton UAS flight operations would not include low-approaches or touch-and-go maneuvers, which are common with fixed-wing aircraft types. Therefore, implementation of Alternative 2 would result in negligible impacts to the NS Mayport airfield noise environment.

6.2 Public Health and Safety

As identified in Section 3.2.3, public health and safety in this EA addresses flight safety or aircraft mishaps, bird/animal aircraft strike hazards (BASH), as well as accident potential zones (APZs). Weapons and construction safety are not addressed because no weapons are associated with the Proposed Action to home base Triton UASs and construction activities would be compliant with all relevant occupational health and safety and anti-terrorism/force protection requirements.

6.2.1 Affected Environment

The affected environment for public health and safety includes NS Mayport airfield and the adjacent airspace.

6.2.1.1 Aircraft Mishaps

Aircraft mishaps could be caused by mid-air collisions with other aircraft or objects, weather difficulties, mechanical failures, pilot error, or BASH. This analysis occurs in the context of two primary ongoing programs that address airfield safety:

- The Navy and DoD AICUZ program aims to protect the health, safety, and welfare of individuals living near a military airfield while preserving the operational capability of the airfield.
- Specific safety requirements of aircraft flight operations are contained in the NS Mayport Air Operations Manual, including detailed standard operating procedures that must be followed by all aircrews operating from the airfield to ensure flight safety (NS Mayport, 2005).

In the unlikely event of an aircraft emergency or mishap, NS Mayport maintains emergency and mishap response plans to guide responses to an aircraft incident (to include its own search and rescue plan), should one occur. These plans assign agency responsibilities and prescribe functional activities necessary to react to mishaps, whether on or off the station. Response would normally occur in two phases. The initial response focuses on rescue, evacuation, fire suppression, safety, elimination of explosive devices, ensuring security of the area, and other actions immediately necessary to prevent loss of life or further property damage. The second phase is the mishap investigation, which involves an array of organizations whose participation would be governed by the circumstances associated with the mishap and actions required to be performed.

6.2.1.2 Accident Potential Zones

Although the likelihood of an aircraft mishap is remote, the Navy identifies APZs to assist in land use planning. APZs are not predictors of accidents. If an aircraft mishap were to occur, there is expected to be a higher probability of occurrence of the mishap within an APZ. The Clear Zone is the area where mishaps are most likely to occur. These zones are delineated based on historical data and departure, arrival, and pattern flight tracks on and near airfield runways. NS Mayport's runway supports a Clear Zone and APZ I for helicopter operations. Because there are fewer than 5,000 annual fixed-wing

operations, APZs I and II for fixed-wing aircraft (which differ from those identified for rotary-wing aircraft) are not required (OPNAVINST 11010.36C, Chapter 3(4)(b)(2), 2008).

6.2.1.3 Bird/Animal Aircraft Strike Hazard

NS Mayport has an effective BASH program that involves the distribution of information and active and passive measures to control how birds use the critical areas around the airfield. Methods outlined in the plan to reduce BASH risk at the airfield include habitat management, bird dispersal, depredation, and bird avoidance. The NS Mayport Operations Department Safety Officer executes the BASH Program but success also depends on participation of the entire Bird Hazard Working Group, to include input from tenant commands, natural resources, and Air Traffic Control to execute effective coordination procedures and avoidance techniques such as the posting of Bird Watch Conditions for aircrews at Base Operations. In addition, NS Mayport uses the resources of the U.S. Department of Agriculture Animal and Plant Health Inspection Service's Wildlife Services Program to minimize the risk posed by birds and other wildlife at the station. Risk minimizations used by U.S. Department of Agriculture personnel include non-lethal and lethal control of hazardous wildlife, as well as the capture and relocation of wildlife from airfield boundaries. Since 2012, there have been 68 BASH incidents reported at NS Mayport. No Class A damage and/or casualties (see Table 3-1 for definition) were reported for these incidents. Outside of birds, other wildlife strikes are not an issue at the airfield.

6.2.1.4 Hurricanes

Hurricane season begins June 1 and runs through November 30. Tropical Cyclone Conditions of Readiness are ordered by the NS Mayport Commanding Officer based on the expected onset of destructive winds. The level of preparation increases with the progression of each Condition of Readiness, from picking up loose gear in Condition of Readiness 5 to reporting to shelters in Condition of Readiness 1. Aircraft are relocated to other airfields as conditions warrant and personnel emergency responses range from sheltering in place to evacuating to an out-of-area location.

6.2.2 Environmental Consequences

Public health and safety analysis addresses issues related to the health and safety of military personnel and civilians living on or near the airfield. Specifically, this section provides information on hazards associated with potential Triton UAS aircraft mishaps, APZs, and BASH. Please note, however, that there is no generally recognized threshold for air safety, which defines acceptable or unacceptable conditions. Therefore, the focus of airfield and airspace managers is to reduce safety risks through a number of measures, including: providing and disseminating information to airfield/airspace users, requiring appropriate levels of training for those using the airfield/airspace, setting appropriate standards for equipment performance and maintenance, defining rules governing the use of the airfield/airspace, and assigning appropriate and well-defined responsibilities to Air Traffic Controllers, airspace managers, and pilots. When these

NS Mayport Potential Public Health and Safety Impacts:

- The No Action Alternative would not change existing conditions for public health and safety at NS Mayport.
- Alternative 2: No measurable changes to mishap risk would occur at the airfield.
- Alternative 2: The 1.7 percent increase in aircraft operations would not necessitate changes to existing APZ boundaries.
- Alternative 2: Implementation of existing BASH avoidance procedures would minimize BASH risks to negligible levels.

measures are implemented, safety risks are minimized, even though they cannot be completely eliminated.

Weapons and construction safety are not addressed in this analysis. No weapons are associated with the Proposed Action and construction/demolition activities would be compliant with all relevant occupational health and safety and anti-terrorism/force protection requirements.

6.2.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to public health and safety. The FAA will continue to be responsible for ensuring safe and efficient use of federal airspace by military and civilian aircraft. To fulfill these requirements, the FAA has established safety regulations, airspace management guidelines, a civil/military common system, and cooperative activities with the DoD. Therefore, no public health or safety impacts are anticipated with implementation of the No Action Alternative.

6.2.2.2 Alternative 2: Naval Station Mayport, Florida

All Triton UAS flight operations would be conducted in accordance with FAA regulations and directives, specific operating manuals, and DoD Flight Information Publications. All emergencies or malfunctions associated with flight operations would be handled in accordance with established aircraft-specific procedures. In addition, existing standard operating procedures at NS Mayport would be employed to ensure appropriate airspace management by all participating aircraft, which would reduce the potential for mid-air collisions. Existing emergency response plans would be updated as necessary to account for any specific requirements of the Triton UAS.

Aircraft Mishaps

Implementing Alternative 2 would not measurably affect mishap risks at NS Mayport. Currently, the NS Mayport airfield annually supports an average of 103,000 flight operations, the majority of which are helicopters. The addition of approximately five Triton UAS flight operations per day would equate to a maximum of 1,825 aircraft annual operations (based on 365 flying days). This would represent a 1.7 percent increase in existing annual operations at the airfield. This negligible increase in operations would not be expected to increase significantly the risk of mishaps.

Additionally, Triton UAS pilots receive extensive training prior to controlling actual aircraft flights. This includes extensive practice of emergency procedures to minimize the potential for aircraft mishaps. The Triton UAS is also designed with multiple redundant systems and is programmed to perform predetermined maneuvers should communication with the aircraft be interrupted. These maneuvers could include programmed flight parameters such as flying to a predetermined location and circling at a prescribed altitude until communication is restored. These maneuvers would minimize mishap risks. Therefore, no significant impacts to public health and safety from aircraft mishaps or mishap response would be expected under Alternative 2.

Accident Potential Zones

Alternative 2 would have no effect on the existing runway or the need to provide for fixed-wing aircraft APZs I or II. This is because total operations would remain below the 5,000 annual fixed-wing threshold to indicate the need for such APZs. No changes to existing APZ boundaries or new APZs are anticipated if Alternative 2 at NS Mayport were implemented.

Bird/Animal Aircraft Strike Hazard

Under Alternative 2, the number of flight operations is not expected to differ noticeably from baseline conditions and the Triton UAS aircraft would continue to operate in the same airfield environment. NS Mayport has a BASH Plan (a component of the Integrated Natural Resources Management Plan [INRMP]) that is designed to minimize the occurrence of BASH. Procedures are in place to identify increased risks and provide decision aids to aircrews in judging whether to alter or discontinue flying operations as necessary. For instance, Air Traffic Control issues bird hazard warnings whenever bird activities are observed and Flight Planning is notified and current conditions posted at Base Operations so that all aircrews are aware of potential BASH issues at the airfield. The risk of BASH incidents is not expected to change substantially because all Triton UAS aircrews would continue to follow applicable procedures outlined in the station BASH Plan and Program, and Triton UAS pilots would adhere to the station's existing standard operating procedures for flight. The number of flight operations would also remain similar to existing conditions and therefore, no significant BASH impacts would be anticipated if Alternative 2 were implemented.

Hurricanes

Under Alternative 2, there would be no changes in the safety procedures undertaken in response to hurricanes. If there is a Tropical Cyclone Conditions of Readiness, Triton UAS operations would be either diverted to another location or discontinued in advance of an approaching storm. The additional personnel associated with Alternative 2 would continue adhering to existing emergency plans and procedures and not affect the community's hurricane evacuation preparedness.

6.3 Air Quality

A region's air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions (see Section 3.3 for the resource definition, regulatory setting, and approach to analysis). Most air pollutants originate from human-made sources, including mobile sources (e.g., cars, trucks, buses) and stationary sources (e.g., factories, refineries, power plants), as well as indoor sources (e.g., some building materials and cleaning solvents). Air pollutants are also released from natural sources such as forest fires and volcanic eruptions.

6.3.1 Affected Environment

The affected environment for the air quality analysis includes the Jacksonville (Florida)-Brunswick (Georgia) Interstate Air Quality Control Region (AQCR), which comprises multiple counties in both Florida and Georgia. However, for purposes of this analysis, the focus for air quality impacts is Duval County where NS Mayport is located. The FDEP is responsible for implementing and enforcing state and federal air quality regulations in Florida and has adapted the National Ambient Air Quality Standards (NAAQS) presented in Table 3-2. Duval County is classified by the USEPA as unclassified/attainment for all criteria pollutants. Therefore, a General Conformity evaluation is not required for federal actions in this county.

The most recent emissions inventory for Duval County and NS Mayport are shown in Table 6-4. Volatile organic compounds (VOCs) and nitrogen oxides (NO_x) emissions are included because they are precursors of ozone. Please note that the 2011 county data are the most recent published from the USEPA, National Emissions Inventory, version 2 (USEPA, 2016a).

Table 6-4 Baseline Annual Air Pollutant Emissions from Airfield Operations at Naval Station Mayport Compared to Duval County

Location	*Air Pollutant Emissions (Tons/Year)*					
	VOCs	*CO*	*NO_x*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
Duval County	51,061.62	158,630.16	36,980.55	20,851.79	21,685.29	8,669.74
Naval Station Mayport	39.80	1.30	2.10	0.02	0.20	NA
Percent Contribution of Emissions in Duval County	*0.077%*	*0.0008%*	*0.006%*	*0.00009%*	*0.0009%*	-

Sources: USEPA, 2016a; FDEP, 2016.
Legend: CO=carbon monoxide; SO_2=sulfur dioxide; and PM_{10} and $PM_{2.5}$=Particulate Matter 10 or 2.5 in size.

NS Mayport operates under a Title V Operating Permit (No. 0310213-029-AV) issued by Florida that includes air quality requirements for fuel burning equipment, i.e., external combustion sources (e.g., boilers and heaters); internal combustion engines (e.g., diesel emergency power generators); surface coating operations (e.g., painting for maintenance of marine vessels, aircraft, and facilities); gasoline dispensing tanks for motor vehicles; solvent degreasing for maintenance operations; abrasive blasting related to marine vessels and aircraft maintenance; and woodworking shops for facility maintenance, packing, and shipping.

Climate Change

In terms of greenhouse gases (GHG) (see section 3.3.2.4 for definition and description) emissions, carbon dioxide equivalent (CO_2e) stationary emissions from stationary sources totaled 17,022,134 metric tons in 2010 (USEPA, 2016b). Please note that data for mobile sources are not published by the county or USEPA, so actual GHG emissions would be more than the approximate 17 million metric tons indicated above. In the southeast, climate change is causing warmer temperatures, sea-level rise, and increased incidents of seawater flooding to coastal communities (USEPA, 2016c). Additionally, sea-level rise is expected to contribute to increased hurricane activity and storm surge, which in turn increases the salinity of estuaries, coastal wetlands, tidal rivers, and swamps (USEPA, 2016c). In fact, the National Oceanic and Atmospheric Administration (NOAA) has estimated that sea levels will rise a minimum of 8 inches to a maximum of 6 feet by the year 2100 (NOAA, 2012).

In response, Baker, Clay, Duval, Flagler, Nassau, Putnam, and St. Johns Counties, as well as their municipalities and partners have joined and developed the Northeast Florida Regional Action Plan for Sea Level Rise (Northeast Florida Regional Council, 2013). This plan identifies how the region will work together to reduce GHG emissions across an area already identified as one of the most vulnerable to sea-level rise in the country.

6.3.2 Environmental Consequences

Effects on air quality are based on estimated direct and indirect emissions associated with the action alternatives. Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations. The study area for air quality impacts is Duval County.

6.3.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to air quality conditions. Therefore, regional air quality would remain consistent with baseline conditions and no significant impacts are anticipated by implementing the No Action Alternative.

6.3.2.2 Alternative 2: Naval Station Mayport, Florida

Under Alternative 2, construction would include equipment, vehicles, and workers. For purposes of this analysis, a conservative estimate of emissions was undertaken for equal comparison of all action alternatives. Please refer to Section 3.3.3 for details of what and how emissions were identified. Anticipated air emissions from construction, demolition, renovation, and operations would represent a negligible percentage of the air emissions inventoried in Duval County and within the AQCR (Table 6-5). Construction emissions associated with Alternative 2 are well below current NS Mayport emissions, would be short-term and temporary, and represent a small fraction of the emissions generated in Duval County. Appendix C contains the emissions calculations used for this analysis. Emissions associated with construction and demolition activities would be temporary in nature, and appropriate fugitive dust-control measures (e.g., watering soils, replanting with vegetation) would be employed to minimize construction emissions to the greatest extent possible.

NS Mayport Air Quality Potential Impacts:

- The No Action Alternative would not change existing air quality in the region.
- Alternative 2: Construction would introduce short-term increases in criteria pollutant emissions. However, these emissions would not change its attainment status.
- Alternative 2: Mobile source emissions generated by the 1.7 percent increase in population and Triton UAS operations would introduce negligible increases in criteria pollutant emissions. However, these long-term effects would not change the regional air quality attainment status.
- Alternative 2: About 740 metric tons of GHG emissions would be introduced from Triton UAS operations and commuters; however, this alone would not cause global warming that could lead to climate change.

Table 6-5 Projected Air Emissions Generated by Alternative 2, Naval Station Mayport

Emission Source	***Air Pollutant Emissions (Tons/Year)[1]***						
	VOCs	*CO*	*NO_x*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e (in metric tons)*
Construction Emissions (2018)[2]	0.52	2.40	6.51	0.09	38.16	4.13	539
Projected Operational Emissions (2019 onwards)[2]							
Triton Operations, Maintenance, and Ground Support Equipment	0.16	1.12	0.86	0.12	0.02	0.02	0.29
Commuting Emissions	0.22	13.33	1.26	0.01	0.09	0.08	739.33
Annual Total Projected Operational Emissions	***0.38***	***14.45***	***2.13***	***0.14***	***0.11***	***0.10***	***739.62***
Percent Contribution of Operational Emissions in Duval County	*0.001%*	*0.028%*	*0.001%*	*0.001%*	*0.001%*	*0.001%*	*0.004%*

Notes: [1]Numbers may not add up due to rounding.
[2]Appendix C provides the calculation details for emissions.

Anticipated emissions associated with the additional personnel commuting to and from NS Mayport and Triton UAS flight operations (referred to as projected operational emissions), just presented in Table 6-5,

would annually contribute less than 1 percent of regional emissions for any criteria pollutant. These increases would not cause or contribute to a violation of any NAAQS, increase the frequency or severity of a violation of any ambient air quality standard, or expose people to substantially increased pollutant concentrations. JP-5 is a kerosene-based jet propellant that is currently used at NS Mayport. Proper procedures for the storage and transfer of the fuel to reduce the potential for impact to air quality during fuel and defuel activities would continue to be followed. Therefore, no significant impacts to local or regional air quality would be expected from implementing Alternative 2 at NS Mayport.

Climate Change

Depending on future GHG emissions and how the climate responds, average global temperatures are projected to increase worldwide by 0.5 to 8.6 degrees Fahrenheit by 2100, with a likely increase of at least 2.0 degrees Fahrenheit (USEPA, 2016c). For the southeast, the U.S. Global Change Research Program anticipates that Florida will experience hotter and wetter climate, and that decreased water availability will be exacerbated by population growth and land-use change, thus continue to increase competition for water and affect the region's economy and unique ecosystems (U.S. Global Change Research Program, 2014).

In August 2016, the CEQ, issued its final *NEPA Guidance on Considerations of the Effects of Climate Change and Greenhouse Gas Emissions* (CEQ, 2016). This memorandum provides guidance on the ways in which federal agencies can improve their consideration of the effects of GHG emissions and climate change in the evaluation of proposals under NEPA. It further advises federal agencies to consider a quantitative and qualitative assessment of impacts if the direct emissions of CO_2e emissions from the proposed action may be reasonably anticipated to exceed 25,000 metric tons or more on an annual basis (CEQ, 2016). This level of emissions should not be considered a significance threshold under NEPA. Currently, there are no formally adopted or published NEPA thresholds of significance for GHG emissions because of the problematic nature of determining at what level proposed emissions would substantially contribute to climate change. The potential effects of the GHG emissions from the proposed action are by nature global and cumulative, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, the appreciable impact on global climate change would occur when proposed GHG emissions combine with GHG emissions from other man-made activities and natural sources on a global scale (USEPA, 2016c). Therefore, GHG emissions are considered cumulatively with other global sources of GHG.

Implementation of Alternative 2 at NS Mayport would contribute directly to emissions of GHGs from the combustion of fossil fuels. During demolition, construction, and clearing activities, 539 metric tons of CO_2e would be produced; once the home basing action is completed and all aircraft and personnel are at the station, about 740 metric tons of CO_2e emissions would be produced annually (see Table 6-5). Emissions of GHGs from Alternative 2 alone would not cause global warming that could lead to climate change. However, these emissions would increase the atmosphere's concentration of GHGs and could incrementally contribute to global warming.

Because of the importance of sustainability for the DoD mission, DoD has implemented GHG emissions goals in response to the President's EO 13653, *Preparing the United States for the Impacts of Climate Change.* The DoD has set a goal to reduce GHG direct emissions from DoD owned/controlled facilities (scope 1) and indirect emissions (scope 2) from DoD owned/controlled facilities 34 percent by Fiscal Year (FY) 2020 from the FY 2008 baseline. The DoD is planning to meet these targets by developing energy efficiency in facilities, identifying new strategies to minimize GHG emissions, and using

innovative approaches and renewable energy (DoD, 2015). Additionally, DoD will reduce its scope 3 emissions (indirect emissions from DoD activities that are from sources not owned or directly controlled by DoD) by 13.5 percent by FY 2020 from the FY 2008 baseline. The DoD *Strategic Sustainability Performance Plan* provides annual updates on reaching GHG reduction goals (DoD, 2015). In 2014, DoD GHG emissions, spanning all sources, continued to edge down with target emissions 13.1 percent below the FY 2008 baseline (DoD, 2015). Examples of Navy-wide GHG reduction projects include energy efficient construction, thermal and photovoltaic solar systems, geothermal power plants, and the generation of electricity with wind energy. The Navy continues to promote and install new renewable energy projects.

In addition to addressing the GHG emissions that would be generated from Alternative 2, CEQ guidance recommends addressing the implications of climate change for the environmental effects of a proposed action, including the adaptation strategies the agency would develop in response to climate change. Climate change has important implications for naval force structure and operations. Factors driving this include the potential impact of sea-level rise on installations, operations, and plans; changing storm patterns and severity; and water and resource challenges (U.S. Navy, 2012). In response, the Unified Facilities Criteria (UFC) for High Performance and Sustainable Building Requirements (UFC 1-200-02), mandates the consideration of changing climate conditions when designing buildings, including potential increased heating or cooling requirements. Additionally, the DoD issued a Floodplain Management Policy in February 2014 that establishes requirements to minimize risks when military assets must be located within floodplains.

Climate change is a clear national security concern and forecast to affect DoD more significantly in the future. The 2014 DoD *Climate Change Adaptation Roadmap* (DoD, 2014a) and DoD Directive 4715.21, *Climate Change Adaptation and Resilience* (DoD, 2016a), describe DoD plans to address this challenge and codify roles and responsibilities for action across DoD. These policies implement the requirements of EO 13653, *Preparing the United States for the Impacts of Climate Change*.

The DoD, U.S. Navy, and NASA are actively engaging in improving their resiliency to climate change: from conducting screening surveys to assess vulnerability of installations from severe weather and projected changes in climate, to developing tools to help installations assess how much water they need to satisfy mission requirements. The DoD is also implementing new *Floodplain Management on Department of Defense Installations* (DoD, 2014b) and a new policy on water rights and water resource management (DoD, 2014b). A program of breakthrough research on climate science is also being conducted by NASA that enhances the ability of the international scientific community to advance global integrated earth system science using space-based observations. The agency's research encompasses solar activity, sea-level rise, the temperature of the atmosphere and the oceans, the state of the ozone layer, air pollution, and changes in sea ice and land ice (NASA, 2015c). As climate science advances, DoD, the U.S. Navy, and NASA will regularly evaluate climate change risks and opportunities in order to develop policies and plans to manage its effects on the DoD operating environment, missions, and facilities.

6.4 Biological Resources

As identified in Section 3.4, this analysis focuses on three major biological resources categories: vegetation, wildlife, and special status species.

6.4.1 Affected Environment

The affected environment for biological resources includes the area proposed for construction adjacent to runway 05/32, Patrol Road, and Perimeter Road, as well as the site proposed for relocating long-term storage on NS Mayport (Figure 6-2). The black arrow in the figure indicates the position where the photo to the right was taken.

View of the Long-Term Storage Area from Patrol Road, looking Northwest

6.4.1.1 Vegetation

The majority of the northern portion of NS Mayport has been previously disturbed with only a few areas of planted slash pine. Open areas adjacent to buildings and roadways consist of planted and landscaped grasses with few shrubs and trees. The affected environment is designated as an operational protected area because it has limited natural resources, supports important military mission requirements, and includes high concentrations of human activity (U.S. Navy, 2006).

6.4.1.2 Wildlife

Wildlife includes animal species such as amphibians, reptiles, birds, and mammals. Habitat types at NS Mayport include coastal, estuarine and upland communities such as forested and grassy areas, each containing various wildlife species. Typical wildlife species include slimy salamander (*Plethodon gluttinosus*), Cope's gray treefrog (*Hyla chrysoscelis*), bronze frog (*Rana clamitans clamitans*), box turtle (*Terrapene carolina*), eastern glass lizard (*Ophisaurus ventralis*), green anole (*Anolis carolinensis*), broadhead skink (*Eumeces laticeps*), ground skink (*Scincella lateralis*), red-bellied snake (*Storeria occipitomaculata obscura*), gray rat snake (*Elaphe obsolete spiloides*), rough green snake (*Opheodrys aestivus*), coral snake (*Micrurus fulvius*), woodcock (*Scolopax minor*), barred owl (*Strix varia varia*), pileated woodpecker (*Dryocopus pileatus*), shrews (*Suncus etruscus*), eastern mole (*Scalopus aquaticus*), gray squirrel (*Sciurus carolinensis*), wood rat (*Neotoma cricetidae*), and gray fox (*Urocyon cinereoargenteus*) (U.S. Navy, 2006).

6.4.1.3 Special Status Species

Special status species are defined as: (1) federally listed plant and animal species and their habitats that are protected under the Endangered Species Act (ESA); and (2) other special status species, including bald and golden eagles, and migratory birds.

Endangered Species Act

Based on a review of historical survey data, NS Mayport's INRMP, and the U.S. Fish and Wildlife Service (USFWS) Information Planning and Conservation system, the species listed in Table 6-6 were identified as potentially occurring in the vicinity of Alternative 2. Fish, corals, and marine mammals were excluded from the list based on the location of the proposed construction in an upland portion of NS Mayport.

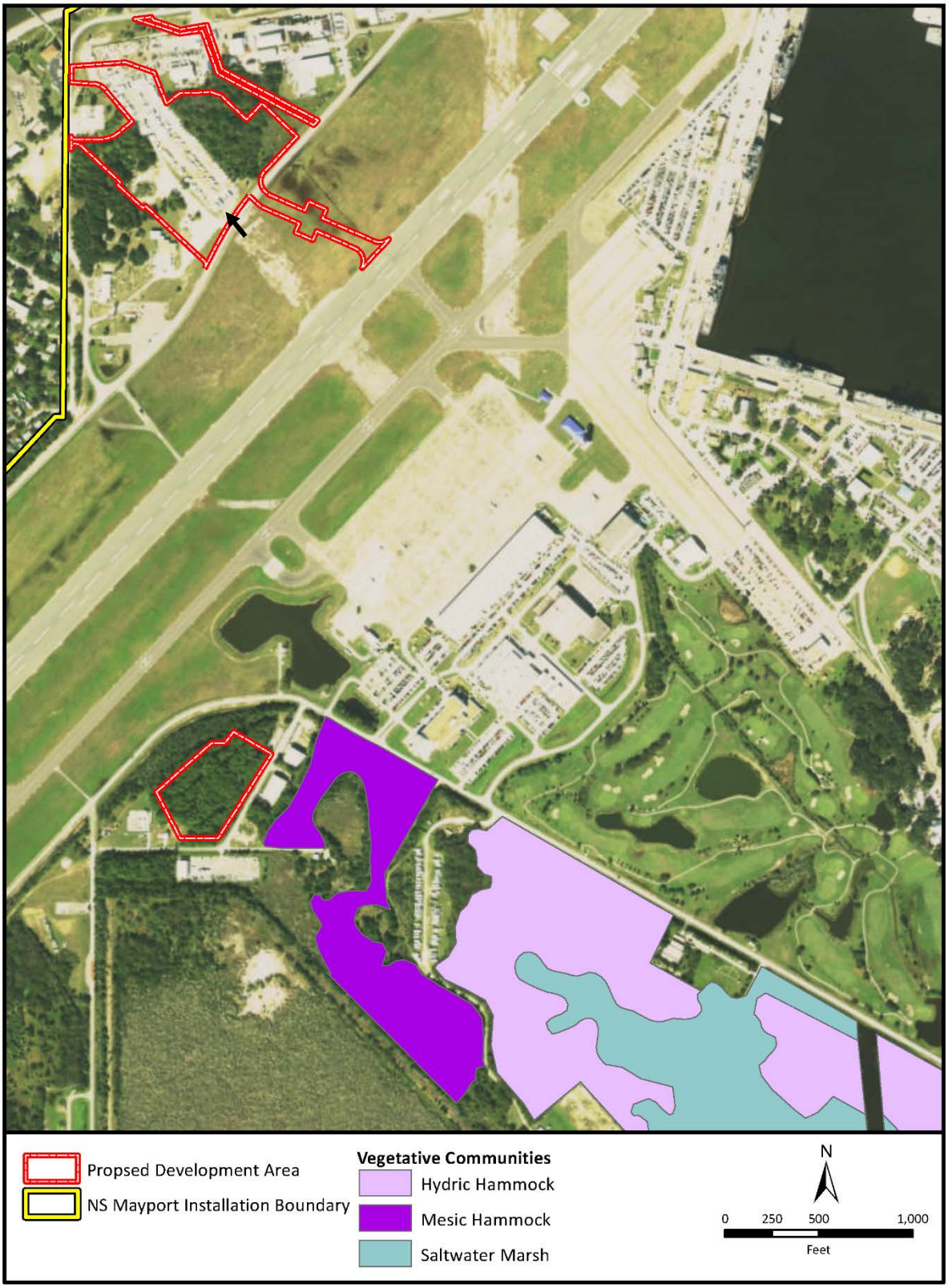


Figure 6-2 Alternative 2 Vegetation Communities Near Project Area

Table 6-6 Endangered Species Act Listed Species Potentially Occurring in the Vicinity of Alternative 2, Naval Station Mayport

Species	*Scientific Name*	*Status*		*Expected Occurrence*
		Species	*Critical Habitat*	
Amphibians				
Frosted Flatwoods Salamander	*Ambystoma cingulatum*	T	None in project area	Not expected
Birds				
Piping Plover*	***Charadrius melodus***	**T**	**None in project area**	**Rare**
Red Knot	***Calidris canutus rufa***	**T**	**Not designated**	**Rare**
Red-cockaded Woodpecker	*Picoides borealis*	E	Not designated	Not expected
Wood Stork	***Mycteria americana***	**T**	**Not designated**	**Rare**
Reptiles				
Eastern Indigo Snake	*Drymarchon corais couperi*	T	Not designated	Not expected
Green Sea Turtle	***Chelonia mydas***	**T**	**None in project area**	**Proximate only**
Hawksbill Sea Turtle	*Eretmochelys imbricata*	E	None in project area	Not expected; pelagic species with no documented nests on NS Mayport
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	E	Not designated	Not expected; pelagic species with no documented nests on NS Mayport
Leatherback Sea Turtle	***Dermochelys coriacea***	**E**	**None in project area**	**Proximate only**
Loggerhead Sea Turtle	***Caretta caretta***	**T**	**None in project area**	**Proximate only**

Note: ***Bold species** indicates the reasonable potential for their occurrence in the NS Mayport project area.
Legend: P=proposed; T=threatened; E=endangered.

Listed birds. Three species of federally listed birds potentially occur at NS Mayport: the piping plover (*Charadrius melodus*), red knot (*Calidris canutus* ssp. *rufa*), and wood stork (*Mycteria americana*), all of which have been designated as threatened. Only piping plovers have designated critical habitat; none is located in the project area.

Piping plovers overwinter in Florida, departing in March to April to return to their breeding and nesting habitat, which ranges from North Carolina through Canada. In Florida, piping plovers inhabit shoreline and dune ecosystems, foraging in the intertidal zone of beaches and estuaries. A seasonal colony of piping plovers occasionally occupies the northern extent of Mayport Beach during winter, in vicinity of the rock jetties.

Red knots migrate along the Florida coast in route from Argentina to the Canadian Arctic and back again. Flocks taking part in this migration typically stop in northeast Florida for a few days in March or April, although there is evidence that a subgroup of red knots overwinters in Florida from as early as November until as late as May. Like piping plovers, red knots inhabit shoreline and dune ecosystems, foraging in the intertidal zone of beaches and estuaries. Fall migrations back to Argentina appear to occur with fewer stopovers, resulting in fewer Florida sightings than in the spring. August is probably the most likely month to sight a red knot in northern Florida during the fall migration.

Wood storks breed and nest in northern Florida during the spring and summer. They build colonies of nests in trees, typically in isolated trees or wooded areas with open canopies near standing water. Wood

storks lay eggs as early as March and the young usually fledge by August. Adults forage for small fish in standing fresh or brackish water. Nesting does not occur anywhere on NS Mayport, but wood storks may transit the installation and explore flooded ditches, shallow ponds, and marsh habitat for food.

Listed nesting sea turtles. Three species of sea turtles are known to nest on beaches in vicinity to NS Mayport: the loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), and leatherback sea turtle (*Dermochelys coriacea*). Loggerhead sea turtles in the northwest Atlantic Ocean distinct population segment (DPS) and green sea turtles in the North Atlantic DPS are listed as threatened. Leatherback sea turtles are federally listed as endangered. While critical habitat has been designated for all three species, none is located in the areas proposed for development. Loggerhead sea turtles are the most frequent nesters of the three species in vicinity of NS Mayport. During the 2013 nesting season, 186 loggerhead sea turtle nests were counted on the beaches of NS Mayport, Huguenot Park, and Hanna Park, as compared to only three green sea turtle nests and three leatherback sea turtle nests.

Female sea turtles nest at night in early summer (typically, May to July). Hatchlings emerge from the nests at night in late summer (typically, July to October) and crawl to the water.

Gopher Tortoise (*Gopherus polyphemus*). The gopher tortoise in its eastern range is a candidate species for possible listing under the ESA. The gopher tortoise is a State of Florida-designated threatened species that nests and forages in upland habitat. Upland habitat is found on NS Mayport and the species is managed in accordance with the NS Mayport INRMP (U.S. Navy, 2006) and the Candidate Conservation Agreement for the Gopher Tortoise, which was developed as a cooperative effort among state, federal, non-governmental, and private organizations to proactively implement gopher tortoise conservation measures across its eastern range (DoD, 2008, as amended in 2012).

Other Special Status Species

Bald eagle (*Haliaeetus leucocephalus*). Removed from the federal threatened and endangered species list in 2007, the bald eagle still has federal protection under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA). Most breeding pairs of eagles in the southeast U.S. occur in peninsular Florida and Louisiana, and some in South Carolina, Alabama, and east Texas. Sporadic breeding takes place in the rest of the southeastern states. Bald eagles are primarily associated with open water areas fringed with riparian habitat, and are typically found along the coasts, rivers, and lakes where nesting occurs in tall, living trees. Bald eagles may not use an otherwise suitable site if there is excessive human activity in the area. Bald eagles are known to actively nest adjacent to the commissary area at NS Mayport.

Migratory Birds. The installation's INRMP identified 165 bird species as being recorded. Of these, 13 are listed at either the state or federal level as endangered, threatened, or a species of special concern (U.S. Navy, 2006).

Climate Change

Under the affected environment, climate change is manifesting itself in rising sea levels, melting sea ice and glaciers, changing precipitation patterns, growing frequency and severity of storms, and increasing ocean acidification. As rising sea levels have pushed saltwater into areas, peat soils are degrading, and plants and trees have died (USFWS, 2010). These changes have generally impacted many of the wildlife in the southeastern U.S., including the special status species identified above. For example, warmer winters are changing the birds' migratory patterns. Roseate spoonbills, which generally stay in Florida,

the Gulf Coast, and points south, are now regularly spotted in South Carolina. Additionally, more frequent storms along the Atlantic Coast are changing beaches. This potentially changes how much habitat is available for piping plovers to build their nests. However, direct changes to distribution patterns of the special status species present on NS Mayport have not been documented.

6.4.2 Environmental Consequences

This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law or statute.

6.4.2.1 No Action Alternative

Under the No Action Alternative, this alternative would not be implemented and there would be no change to biological resources. Therefore, existing conditions for biological resources would remain unchanged if the No Action Alternative were implemented.

6.4.2.2 Alternative 2: Naval Station Mayport, Florida

The affected environment for the analysis of effects to biological resources associated with Alternative 2 includes the approximate disturbance of 25 acres for facility and infrastructure construction, and long-term storage relocation. The affected environment also includes the area subjected to noise-level changes from construction and Triton UAS operational activities.

Vegetation

In total, close to 15 acres of vegetation would be removed, of which 10 acres are composed of planted slash pine. Adherence to the station's Forest Management Plan, whereby other dead, dying, or diseased trees would be replaced, ensures that there are no significant effects to on-station forested areas. Once the Triton UAS aircraft are operational, the station would continue to manage all important and natural plant communities under the programs outlined in its INRMP and subsequent annual updates (U.S. Navy, 2006). There would be no significant impacts to vegetation communities from implementing Alternative 2 at NS Mayport.

Wildlife

Noise created during construction and demolition activities may result in temporary behavioral disturbance to wildlife, mostly limited to avoidance of the immediate area. However, these minor changes in behavior are not expected to differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Once construction is complete,

NS Mayport Potential Biological Resource Impacts:

- The No Action Alternative would not change existing conditions for biological resources on NS Mayport.
- Alternative 2: 10 acres of planted slash pine would be impacted.
- Alternative 2: Construction noise may result in minor behavioral disturbance. However, effects to feeding, sheltering, and reproduction are not anticipated, and temporary alterations to behavior would return to normal once construction is complete.
- Alternative 2: Once operational, Triton UAS aircraft operations would introduce 1.7 percent more operations, producing a less than 1 dB DNL increase in the noise levels. This amount of change would negligibly impact wildlife.
- Alternative 2: Pursuant to the ESA, federally listed species may be affected but are not likely to be adversely affected by this alternative. Pursuant to the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, no harm or incidental take of eagles or migratory birds is anticipated.

abundance and frequency of wildlife occurring in the project area are expected to return to prior levels. Given the current level of air traffic and the Triton UAS' relatively low SELs, ongoing impacts to wildlife in the vicinity would be negligible. No significant impacts to wildlife would be expected under Alternative 2, NS Mayport.

Special Status Species

Endangered Species Act. Similar to the potential effects on wildlife described above, only minor behavioral disturbance to federally listed species may occur resulting from construction noise. Avoidance of the immediate area during construction may result; however, effects to ESA-listed species would be insignificant and discountable. Behavior is expected to return to normal once construction activities are complete. Table 6-7 lists the species found on NS Mayport and identifies the potential effect of implementing Alternative 2.

Table 6-7 Endangered Species Act Conclusions for Alternative 2, Naval Station Mayport

Species	***Scientific Name***	***Status***	
		Species	*Critical Habitat*
Birds			
Piping Plover	*Charadrius melodus*	May affect, not likely to adversely affect	No effect
Red Knot	*Calidris canutus rufa*	May affect, not likely to adversely affect	n/a
Wood Stork	*Mycteria americana*	May affect, not likely to adversely affect	n/a
Reptiles			
Green Sea Turtle	*Chelonia mydas*	May affect, not likely to adversely affect	No effect
Leatherback Sea Turtle	*Dermochelys coriacea*	May affect, not likely to adversely affect	No effect
Loggerhead Sea Turtle	*Caretta caretta*	May affect, not likely to adversely affect	No effect

Legend: n/a=not applicable.

Artificial light is the only potential stressor from Alternative 2 that may impact nesting sea turtles and hatchlings. The Navy will ensure, to the extent warranted and consistent with operational safety and security concerns, lights installed for Alternative 2 will adhere to the Florida Fish and Wildlife Conservation Commission *Approved Sea Turtle Lighting Guidelines* and recommendations described in the NS Mayport *Light Management Assessment*. The use of appropriate lights and fixtures, to include using amber light emitting diode bulbs, limiting the height of fixtures when appropriate, and shielding bulbs to prevent direct light shining towards the beach and mitigate unnecessary sky glow will ensure that Alternative 2 does not negatively affect nesting sea turtles and hatchlings. These measures would be incorporated into construction contract requirements to the maximum extent practicable.

Pursuant to the ESA, Alternative 2 at NS Mayport:

- may affect, but is not likely to adversely affect, piping plovers and would have no effect on their critical habitat because none is located in the project area;
- may affect, but is not likely to adversely affect, red knots;
- may affect, but is not likely to adversely affect, wood storks;
- may affect, but is not likely to adversely affect, green sea turtles and would have no effect on their critical habitat because none is located in the project area;
- may affect, but is not likely to adversely affect, leatherback sea turtles and would have no effect on their critical habitat because none is located in the project area; and

- may affect, but is not likely to adversely affect, loggerhead sea turtles and would have no effect on their critical habitat because none is located in the project area.

The Navy initiated informal consultation with the USFWS North Florida Ecological Services Office on June 10, 2016. On July 14, 2016, the USFWS concurred with the Navy findings. Appendix B provides the correspondence.

Gopher Tortoise. Under Alternative 2, about 7 acres of potential gopher tortoise habitat would be permanently impacted if Alternative 2 were implemented. However, prior to any ground disturbance, the site would be surveyed for gopher tortoises and their burrows, and if any gopher tortoises were found, they would be relocated per the objectives identified in the NS Mayport INRMP (U.S. Navy, 2006) and the Candidate Conservation Agreement for the Gopher Tortoise (DoD, 2008, as amended in 2012). No significant impacts to this special status species would occur.

Other Special Status Species

Bald Eagles. Bald eagles are regularly observed in low numbers around NS Mayport; however, there is no suitable nesting or foraging habitat in the project area. Therefore, it is unlikely that construction or Triton UAS operations would impact bald eagles if Alternative 2 were implemented at NS Mayport. Pursuant to the Bald and Golden Eagle Protection Act, no harm or incidental take of bald eagles is anticipated.

Migratory Bird Treaty Act. Military-readiness activities associated with Alternative 2, NS Mayport, would include Triton UAS flight operations. Non-military readiness activities include construction of the facilities and once home based, administration and maintenance operations. Prior to construction, surveys would be undertaken to ensure that neither resident nor transient bird species are present. While migratory birds may occur during construction and operation, previous disturbance has resulted in relatively low-quality habitat in the project area. Similar to effects described above for other wildlife, temporary behavioral disturbance may result from noise or human activities. However, these minor changes are not expected to differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Once construction is complete, abundance and frequency of migratory birds occurring in the project area are expected to return to prior levels. Pursuant to the Migratory Bird Treaty Act, no harm to or incidental takes of migratory birds are anticipated.

Climate Change

In the southeast, rising sea levels are expected to flood as much as 30 percent of the habitat on the USFWS's coastal refuges. Some of the places most vulnerable to sea level rise in the U.S. are in the southeast, including the north Florida coast. The average annual temperature has risen about 2 degrees Fahrenheit, with substantially warmer winters. Climate models project an increased rate of warming across the southeast through 2100. The number of freezing days has declined by four to seven days per year since the mid-1970s. There has been an increase in heavy downpours in many parts of the southeast, while the areas experiencing severe drought have increased over the past three decades (USFWS, 2016).

Although Alternative 2 would not be directly impacted by climate change in the next decade or so, changes in distribution patterns of wildlife and special status species may be encountered. However, Alternative 2 does not have environmental effects, such as reducing water resources, habitat

alterations, or species distribution changes that could be exacerbated by climate change in the foreseeable future. Because monitoring climate change is a dynamic process, the Navy will continue to analyze any potential climate change effects in the action area and also any adaptation measures that may be necessary.

6.5 Water Resources

As identified and defined in Section 3.5, this discussion of water resources includes groundwater, surface water, wetlands, and floodplains.

6.5.1 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under water quality resources at NS Mayport. The affected environment encompasses the areas proposed for construction to the northwest of the runway 05/23 and the site proposed for relocating the long-term storage site. Neither floodplains nor wetlands would be affected by Alternative 2 so no further examination of these facets is presented for water resources. Compliance with the Coastal Zone Management Act (CZMA) is addressed in Section 10.1, Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations.

6.5.1.1 Groundwater

Three aquifers are present at NS Mayport: surficial, intermediate, and Floridan. The surficial aquifer reaches a depth of approximately 100 feet below land surface. Local precipitation recharges the surficial aquifer. Due to the unconfined nature of the surficial aquifer, it can be a recipient of pollutant discharges (e.g., spills). The intermediate aquifer is confined by the low permeability sandy clay of the Hawthorn Group (a geological formation). The low permeability of the Hawthorn Group limits contamination of the intermediate aquifer from the surficial aquifer. The Floridan Aquifer begins at approximately 400 feet below land surface at NS Mayport. This aquifer is the principal source of fresh water for NS Mayport and northeast/central Florida. The potentiometric surface (or the level to which water rises in a well; in a confined aquifer such as the Floridan it represents the surface of the aquifer) is above land surface, resulting in a net upward hydraulic gradient between the Floridan and surficial aquifer. In areas where the confining layers are less impermeable, the intermediate aquifer might actually be recharged by the Floridan aquifer (USEPA, 1996). Currently, there is minor saltwater intrusion into the aquifer that is removed at the treatment plants. This is primarily due to population growth and agricultural withdrawals (Koch-Rose et al., 2011).

6.5.1.2 Surface Water

Major surface water bodies on and adjacent to the installation include the St. Johns River, Chicopit Bay, and Lake Wonderwood. Florida classifies the Lower St. Johns River (the section of river where NS Mayport is located) as a Class III water body, which has the following designated uses: recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife.

The Lower St. Johns River in 1998 was included on the 303(d) list as impaired for nutrients. The river was verified as impaired by nutrients based on elevated chlorophyll-a levels (i.e., algal organic matter) in both the fresh and marine portions of the river, and was included on the verified list of impaired waters for the Lower St. Johns River Basin. Total Maximum Daily Loads (TMDLs) were established for the allowable loadings of total nitrogen and total phosphorus to the fresh and marine portions of Lower St. Johns River. These TMDLs restore the river so that it meets its applicable water quality criteria for nutrients and dissolved oxygen (FDEP, 2006).

NS Mayport is a well-developed military facility, with most areas containing structures, impervious paved roads, and parking lots; however, there are also natural land areas on the installation, with grass and trees, a waterfront, a large area of wetlands, and two large dredge spoils areas. Surface water features on the installation include a large and varied drainage system with interconnected ditches and swales; infiltration areas, stormwater inlets, pipes, and other flow structures; oil-water separators; and stormwater ponds. The 21-acre Lake Wonderwood is one of the most notable elements of the surface water system on the installation. There are no surface water bodies located within the proposed construction sites.

Surface water at NS Mayport drains mainly in three directions, north to the Turning Basin and St. Johns River, west to Chicopit Bay, or south to Lake Wonderwood and a marsh area. Within these three general flow directions, the installation has been divided into 60 drainage basins. There are 48 direct discharges either through drainage pipes or in concentrated ditch flows. Nineteen drainage basins either sheet flow to low points with no apparent outfall, or sheet flow off site with no concentrated discharge point.

NS Mayport has obtained a Florida Multi-Sector Generic Permit (Permit No. FLR05A970), which authorizes the implementation of the National Pollutant Discharge Elimination System (NPDES) program for industrial activities. NS Mayport must comply with all conditions of the issued permit, including development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The plan identifies sources of pollution that affect the quality of stormwater discharges from industrial areas associated with airfield operation and support activities. The plan also provides guidelines for the station's stormwater pollution prevention program and technical procedures to prevent illicit discharges to the stormwater drainage system. In addition, the station reduces pollutants in stormwater discharges by implementing best management practices at industrial facilities. These practices can include structural modifications such as skimmer dams, spill-control gates, oil-water separators, and roof and canopy structures over waste storage areas and personnel training areas (U.S. Navy, 2006). In addition, NS Mayport has a Phase II Municipal Separate Storm Sewer System permit (Permit No. FLR04E056). This permit allows for the discharge of untreated stormwater runoff into local waterbodies and requires the development of a stormwater management plan to prevent harmful pollutants from being washed or dumped into the municipal separate storm sewer systems.

6.5.2 Environmental Consequences

Factors considered in the analysis of potential impacts to water resources include: (1) violation of federal and/or state water quality standards, (2) substantial depletion of groundwater supplies or interference with groundwater recharge, (3) alteration of existing drainage patterns, (4) degradation of the area's ecosystem due to the direct discharge of fill material into a pristine wetland, and (5) creating or worsening flood hazard conditions in a manner that endangers people or structures.

6.5.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline water resources. Therefore, no significant impacts to water resources would occur with implementation of the No Action Alternative.

6.5.2.2 Alternative 2: Naval Station Mayport, Florida

The study area encompasses the proposed construction and ground disturbance areas related to Alternative 2 (see Figure 6-1).

Groundwater

Alternative 2 would not result in significant vegetation removal; soil compaction, as soils in the proposed development area have been previously disturbed; or alter the natural drainage flow, as pre-construction hydrologic connectivity would be maintained through the use of culverts and other measures, as deemed appropriate.

None of the construction, demolition, or renovation activities associated with Alternative 2 would extend below ground surface to a depth that would affect the underlying aquifer. Although fuel or other chemicals could be spilled during construction, demolition, and renovation activities, implementation of the required Spill Prevention, Control, and Countermeasures (SPCC) Plan and immediate cleanup of any spills would prevent infiltration into groundwater resources.

Under Alternative 2, over 900 individuals would be added to the area population and maintenance activities for the Triton UAS would occur. These activities would introduce increases in the use of potable water from the Floridan Aquifer system. However, there is existing capacity in the aquifer system to meet these increased demands. Stormwater best management practices, such as silt fencing, would be in place to appropriately direct surface waters to recharge areas. Therefore, negligible impacts are anticipated to groundwater resources.

Surface Water

Approximately 8 acres of impervious surfaces would be added to NS Mayport. Localized increases in stormwater runoff could potentially occur; however, any possible increases would not exceed the current capacities of stormwater systems at the station. Retention structures would be provided to collect stormwater from the newly developed area. These stormwater retention structures would be designed, through size and depth of the retaining areas and the manner in which they drain to the system, to discharge no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Construction practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. Stormwater best management practices and standard operating procedures are detailed in the station's SWPPP. Additionally, a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development," would be used to

NS Mayport Potential Water Resources Impacts:

- Under the No Action Alternative, no significant impacts to water resources would occur.
- Alternative 2: Groundwater would not be affected by construction or operations.
- Alternative 2: During construction, erosion and sedimentation measures would ensure no significant impacts would be introduced to the lower St. Johns River.
- Alternative 2: Once operational, no significant impacts would occur to water resources due to Triton UAS activities.
- Alternative 2: No wetlands or floodplains would be impacted.

minimize stormwater effects. These practices could include reducing impervious surfaces, using porous pavements, and installing cisterns.

During construction and demolition activities, runoff from site improvements could result in a slight increase in turbidity. Potential impacts from an increase in turbidity would be minimized with implementation of best management practices (e.g., wetting of soils, silt fencing, and detention basins) and adherence to erosion and stormwater management practices, as determined by the Navy, to contain soil and runoff on the project areas. These practices, SPCC plans, and SWPPPs are required mitigation measures that would be implemented during construction to reduce effects to TMDLs in the lower St. Johns River to less than significant. Construction and demolition activities associated with Alternative 2, therefore, are not anticipated to degrade the water quality or affect beneficial uses of surface water resources.

The Navy would be required to obtain permit coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities ("Construction General Permit") from FDEP for the proposed construction activities prior to any ground disturbance activities. The Navy would select, install, and maintain effective erosion- and sediment-control measures as identified and as necessary to comply with the Construction General Permit (USEPA, 2012). In addition, under the Construction General Permit, the Navy would develop a SWPPP for the proposed construction activities prior to implementing Alternative 2. The SWPPP would describe and ensure implementation of practices that would reduce pollutants in stormwater discharges into the Atlantic Ocean and prevent violations of applicable regulations and standards.

Construction and demolition equipment (e.g., bulldozers, backhoes, dump trucks, and cranes) would be stored at the construction site. Fuels, hydraulic fluids, oils, and lubricants also would be stored to support contractor vehicles and machinery. No other hazardous materials are anticipated to be stored or used at the construction site. Construction contractors would follow appropriate actions to protect against potential petroleum or hazardous material spills. Proper housekeeping, maintenance of equipment, and containment of fuels and other potentially hazardous materials would be conducted to minimize the potential for a release of fluids into groundwater or surface waters. If a spill or leak were to occur, procedures identified in the SWPPP and SPCC Plan would be implemented to contain the spill and minimize the potential for, and extent of, associated contamination. Therefore, no significant impacts on water quality, groundwater, or surface water bodies would be expected from implementing Alternative 2.

Triton UAS operations are unlikely to have significant impacts to water resources. NS Mayport would continue to operate within all permitted guidelines, follow all SPCC Plans, and adhere to the SWPPP. There would be insignificant impacts to water resources through implementation of Alternative 2.

Climate Change

According to the USEPA, changes to water sources due to increasing temperatures include shrinking water supplies due to hotter weather, increased evaporation, as well as increased demand from humans, animals, and agricultural products. In terms of water quality, freshwater resources, such as the St. Johns River, along the coast face risks from sea level rise (USEPA, 2016e). As the sea rises, saltwater moves into freshwater areas. For example, rising sea level increases the salinity of surface water and groundwater due to inundation of low-lying coastal land and saltwater intrusion into the Floridan Aquifer, which provides water supply to northeast Florida (Koch-Rose, et al., 2011). Additionally, drought can cause coastal water resources such as wetlands to become more saline as freshwater

supplies from rivers are reduced. Stormwater and waste water systems also face risks from rising sea levels and the damaging impacts of storm surges (USEPA, 2016e). Floodplains may also expand and thus expose more infrastructure to increased episodes of inundation.

6.6 Cultural Resources

This discussion of cultural resources includes prehistoric and historic archaeological sites; historic buildings, structures, and districts; and physical entities and human-made or natural features important to a culture, a subculture, or a community for traditional, religious, or other reasons. See Section 3.6 for the resource definition, regulatory setting, and approach to analysis.

6.6.1 Affected Environment

The management of cultural resources at NS Mayport is guided by the Integrated Cultural Resources Management Plan (ICRMP) for Naval Station Mayport (U.S. Navy, 2008a). The ICRMP provides guidance and establishes standard operating procedures for the management of historic properties on the station in compliance with Sections 106 and 110 of the National Historic Preservation Act (NHPA), other federal laws, and DoD and Navy instructions and policies on the management of cultural resources. Section 106 of the NHPA, as implemented by 36 CFR part 800, requires federal agencies to consider the effects of their actions on historic properties before undertaking a project. A historic property is defined as any building, site, structure, object, or district that is included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). The NRHP is the official inventory of the nation's historic properties. The NRHP also includes National Historic Landmarks. In consideration of 36 CFR part 800, federal agencies are required to initiate consultation with the State Historic Preservation Officer (SHPO) and interested parties to define the proposed action, its potential effects on significant cultural resources, and the means to avoid, minimize, or mitigate effects on historic properties.

The area of potential effects (APE) for cultural resources is the geographic area or areas within which an undertaking (project, activity, program, or practice) may cause changes in the character or use of any historic properties present. The APE is influenced by the scale and nature of the undertaking and may be different for various kinds of effects caused by the undertaking. For Alternative 2, NS Mayport, the Navy determined that the APE includes the area that would support the facilities to home base the Triton UAS—within the Patrol Road and Navy-Mayport Access Road loop.

Historic Context. Archeologists divide the prehistory of the region into three distinct periods: Paleo-Indian (12,000 Before Christ [B.C.] to 7500 B.C.), Archaic (7,500 B.C. to 2,000 B.C.), and the St. Johns Period (1,000 B.C. to Anno Domini [A.D.] 1565). The Timucuan Indians—who were part of the Mississippian culture—occupied the St. Johns River area in the early 1500s (U.S. Navy, 2008a). The Timucuan Indians lived along the St. Johns River in 1513, when Spanish explorer, Juan Ponce de Leon, landed approximately 3 miles south of present day Jacksonville. In May 1562, the French arrived on the north bank of a large river, which they referred to as the *Riviere de Mai*, or the River May. In 1564, the French returned to Florida to establish a settlement and selected a site approximately 5 miles (8 kilometers) up the St. Johns River. This fort and its grouping of fortifications marked the first of many military bases at the present site of Mayport. A Spanish settlement at St. Johns, Fort Piribiriba, appears on a Spanish map dated 1700. Surrounding the Spanish fortification were associated Guale and Timucuan Indian settlements on a peninsula at the mouth of Pablo Creek. Today, the northern part of this peninsula lies within present day NS Mayport (U.S. Navy, 2008a).

Throughout the 16th and 17th centuries, the area came under Spanish, French, and British control. During this time, plantations in the Mayport area produced cotton, sugar, oranges, and indigo for

export. Commercial export operations also existed in the Mayport area, yielding orange juice and turpentine. The St. Johns River area was very attractive to settlers because conditions for economic development existed in both plantation agriculture and river commerce (U.S. Navy, 2008a). Ships could enter the St. Johns River and transport their goods throughout inland Florida. Ship captains often found it difficult to navigate through the turbulent waters and terrain surrounding the mouth of the river. Due to increased public demand, Congress appropriated monies in May 1828, to construct a lighthouse to protect ships, goods, and people traveling on the St. Johns River. The project was completed by 1830. Change in topography and its proximity to the water, damaged and ultimately destroyed the lighthouse. In 1834, another lighthouse was rebuilt approximately 1.6 miles upriver from the previous site. Weather also destroyed the second St. Johns River lighthouse. However, by the mid-1850s, hoping to minimize shipwrecks and increase river commerce without a jetty, Congress committed monies to build a taller lighthouse at the mouth of the St. Johns River (U.S. Navy, 2008a).

This third lighthouse was located further inland and across the sand bar from the second lighthouse tower. By 1858, the government completed the 85-foot, red-brown brick tower lighthouse. The entry to the structure was constructed through a small adjoining building on the west side (Figure 6-3). The 1858 lighthouse, known as the St. Johns Lighthouse, is an extant property at NS Mayport and is listed in the NRHP (U.S. Navy, 2008a). During the Civil War, the lighthouse functioned as a channel marker for Union boats, a use curtailed by the Confederates who extinguished the light during a battle. After the war, lanterns were substituted for the tower lamp until the light could be replaced in 1867.

Figure 6-3 St. Johns Lighthouse

In 1939, Congress authorized construction of a naval base in the Jacksonville area where carriers, planes, and berthing piers could be supported (U.S. Navy, 2008a). Mayport served as an airfield until May 1946, when its status switched to caretaker status; however, instead of closing the station completely, the Navy transferred stewardship of Mayport to the U.S. Coast Guard. In May 1948; however, the Navy reclaimed Mayport and reopened its airstrips as a Naval Outlying Landing Field for NAS Jacksonville (U.S. Navy, 2008a). Mayport was a boomtown between 1953 and 1960, expanding in operational significance, land area, and new construction. The Navy found the facilities at Mayport critical to Fleet Operations. Primarily the 1959 to 1961 expansions at NS Mayport were in support of the Atlantic Fleet Dispersal Program for 3 carriers and 16 destroyers. From 1964 to 1966, events at NS Mayport were relatively routine with home ported ships embarking on training exercises in the Atlantic and as part of operations in the Mediterranean, Middle East, and Asia (U.S. Navy, 2008a). From 1964 to 1975, when the U.S. was actively involved in the Vietnam Conflict, the military ordered nearly 30,000 jet aircraft, helicopters, and several hundred new vessels. Approximately 16,000 military personnel were stationed at NS Mayport from 1965 to 1975 (U.S. Navy, 2008a). The years following the Vietnam Conflict (1975 to 1989) were marked by a slow-down in defense-related spending and an overall reduction in the size of the military. The Post-Cold War (1989 to 2000) environment did little to slow operations at NS Mayport. The 1990s also saw the decommissioning of several ships at NS Mayport. During this time, the Navy assigned the aircraft carrier USS John F.

Kennedy to NS Mayport; however, by the late 2010s, the USS John F Kennedy was decommissioned with other missions taking its place.

6.6.1.1 Archaeological Resources

Several sites are eligible for listing in the NRHP; however, none is located within the APE of this alternative.

6.6.1.2 Architectural Resources

One NRHP-listed property, the St. Johns Lighthouse, is located within the APE for this alternative.

6.6.1.3 Traditional Cultural Properties

Currently, no resources of traditional, religious, or cultural significance to Native American tribes have been identified within NS Mayport.

6.6.2 Environmental Consequences

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts are assessed by identifying the types and locations of proposed activity and determining the location of cultural resources that could be affected. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource. Indirect impacts result primarily from project-induced population increases on base and the need for construction to accommodate this population growth.

NS Mayport Potential Cultural Resources Impacts:

- The No Action Alternative would not affect existing cultural resources at NS Mayport.
- Alternative 2: No effects to archaeological or traditional cultural properties.
- Alternative 2: The St. Johns Lighthouse is adjacent to the proposed construction site; however, the Navy concluded that there would be no direct effects to the footprint or the viewshed of the historic property.

6.6.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to cultural resources. Therefore, no significant impacts to cultural resources would occur with implementation of the No Action Alternative.

6.6.2.2 Alternative 2: Naval Station Mayport, Florida

This alternative involves a mix of new construction, demolition, and use of existing infrastructure and services. The APE takes into account direct effects incurred at the proposed construction site as well as viewshed and auditory effects.

The St. Johns Lighthouse is located about 580 feet from the edge of proposed construction and in the APE. A surface inspection of the project APE was conducted on December 17, 2015. Archaeologists observed evidence of significant disturbance on undeveloped portions of land throughout the APE and concluded that this was the product of original runway construction and ongoing runway/grounds maintenance over the past 70 years. Given observed site conditions and a review of historical U.S. Geological Survey maps, the Navy concluded that there is a low probability that intact archeological resources will be identified in the course of the Triton UAS project. No archaeological sites are identified in the APE. However, in the event that intact subsurface cultural resources are inadvertently discovered during construction or demolition activities, work would cease, the cultural resources would be

evaluated for NRHP eligibility, and consultation would continue per 36 CFR parts 800.4 to 800.6. The NS Mayport Cultural Resources Manager would follow the procedures outlined in the station's ICRMP.

Based on the findings presented above, the Navy has determined that there will be no direct effects to the St. Johns Lighthouse footprint or the viewshed of the historic property. On June 30, 2016, the Navy requested the Florida State Historic Preservation Office for their concurrence that Alternative 2 warrants a finding of "No Historic Properties Affected." Agency correspondence is included in Appendix B.

No traditional cultural properties have been recognized within the APE; however, on August 1, 2016, the Navy notified the Miccosukee Tribe of Indians, the Seminole Nation of Oklahoma, and the Seminole Tribe of Florida of the Proposed Action and Alternative 2 at NS Mayport.

Operationally, noise levels would increase by less than 1 dB and therefore, would not damage historic structures or interrupt traditional activities within the APE. The addition of about 400 military personnel and their dependents would not affect cultural resources as no properties listed or potentially eligible for listing on the NRHP would be affected. In summary, there would be no affect to NRHP properties in the APE and no impacts to traditional cultural resources if Alternative 2 at NS Mayport were implemented.

6.7 Socioeconomics

This section discusses population demographics, employment and income, and housing occupancy status data provide key insights into socioeconomic conditions that might be affected by a proposed action. See Section 3.7 for the resource definition and the approach to analysis.

6.7.1 Affected Environment

The study area for socioeconomic resources includes Duval County and the Jacksonville Beaches Census County Division (CCD), which includes the village of Mayport, as well as Atlantic, Neptune, and Jacksonville Beaches. This CCD was chosen because it includes the area within commuting distance of the station. Duval County and State of Florida statistics are provided for comparison purposes. This section addresses population, employment, income, and housing characteristics of the affected environment.

6.7.1.1 Population

The 2014 population of the Jacksonville Beaches CCD was 54,714 and Duval County was 880,750 (Table 6-8). From 2010 to 2014, Jacksonville Beaches CCD population decreased by 641, a decline of 1.2 percent while over the same period, Duval County population increased by 3.0 percent. In comparison, the State of Florida population grew by 4.6 percent between 2010 and 2014. The Jacksonville Beaches CCD population is projected to grow approximately 3.4 percent from 2014 to 2020, compared to a projected 14.7 percent growth rate for Duval County and 9.7 percent for the state (U.S. Census Bureau, 2016a; FloridaHomeTownLocator, 2016). The total estimated daily military and civilian workforce population at NS Mayport totaled 13,444 with about 90 percent comprising enlisted military (11,700) and 10 percent military officers (1,300). These military personnel were accompanied by 7,228 dependents (spouses and children).

Table 6-8 Study Area Population and Population Trends

Jurisdiction	*2000*	*2010*	*2014*	*Growth Rate 2010-2014 (Percent)*	*2020 Projection*	*Growth Rate 2014-2020 (Percent)*
Jacksonville Beaches CCD	NA	55,355	54,714	-1.2	56,578[1]	3.4
Duval County	778,879	854,848	880,750	3.0	1,010,561	14.7
Florida	15,982,378	18,511,620	19,361,792	4.6	21,236,667	9.7

Sources: U.S. Census, 2016a; Bureau of Economic and Business Research, 2010, 2015.
Legend: NA = not available.
Note: [1]Projection based on 0.56 percent compound annual growth rate (FloridaHomeTownLocator, 2016).

6.7.1.2 Employment and Income

Total employment in Duval County was approximately 456,128 in 2014 (Office of Economic and Demographic Research [EDR], 2015). County employment by industry is shown in Table 6-9. The industries that employ the greatest number of people included trade, transportation, and utilities (20.6 percent); professional and business services (16.5 percent), educational and health services (15.4 percent); financial activities (11.3 percent); leisure and hospitality as well as government (10.9 percent each); construction (5.2 percent); manufacturing (5.0 percent); and all other industries account for the remaining 4.3 percent (EDR, 2015).

Table 6-9 Baseline Percent Employed by Industry in the Study Area, 2014

Industry	*Duval County Percent*	*Jacksonville Beaches CCD*
Trade, Transportation, and Utilities	20.6	18.9
Professional and Business Services	16.5	17.4
Educational and Health Services	15.4	20.6
Financial Activities	11.3	10.8
Leisure and Hospitality	10.9	14.0
Government	10.9	3.4
Construction	5.2	5.8
Manufacturing	5.0	4.1
Other Services	2.6	3.2
Information	1.6	1.6
Natural Resource and Mining	0.1	0.3
Total	**100**	**100**

Sources: EDR, 2015; U.S. Census Bureau, 2014.

Total civilian employment in the Jacksonville Beaches CCD was 25,865 in 2014 (U.S. Census Bureau, 2014). The CCD employment by industry is shown in Table 6-7. The industries that employ the greatest number of people included educational and health services (20.6 percent); trade, transportation, and utilities (18.9 percent); and professional and business services (17.4 percent); all other industries account for the remaining 43.2 percent (U.S. Census Bureau, 2014).

The unemployment rate in 2014 for Duval County was 6.7 percent. The county unemployment rate has fluctuated over recent years from a low 3.3 percent in 2000 to a high of 11.4 percent in 2010 (EDR, 2015). In comparison, the unemployment rate in the Jacksonville Beaches CCD was 7.6 percent in 2014, about 1 percent higher than the county overall level (EDR, 2015).

According to the City of Jacksonville's (COJ) Office of Economic Development (COJ, 2016), NS Mayport employs approximately 13,444 military and civilian personnel. In 2009, payrolls, procurement contracts, and expenditures at NS Mayport generated approximately 811 additional indirect jobs with labor

income of nearly $40 million and total induced output (payroll and expenditures [operating and capital improvement costs]) of approximately $58 million in 2009 (Wilbur Smith Associates, 2010).

Total personal income in Duval County increased by 13.7 percent from 2010 to 2014. In comparison, per capita income in the county had an increase of 39.8 percent from 2000 to 2010. Per capita income grew at 9.6 percent in the county from 2010 to 2014, compared to a 52.7 percent increase from 2000 to 2010 at the state level (EDR, 2015). Comparable data are not available at the CCD level. The slower county rates of increase from 2010 to 2014 were most likely due to the economic downturn that was especially felt in Florida's housing industry and the associated real estate bubble they experienced.

The median household income in 2014 for Duval County was $47,582 compared to $57,100 for the CCD. The median family income was also greater for the CCD ($72,673) compared to the county ($59,043). Approximately 17.4 percent of Duval County residents lived in households with incomes below the poverty line, compared to 12 percent in the CCD (U.S. Census American Factfinder, 2016).

6.7.1.3 Housing

In 2014, there were approximately 391,719 housing units in Duval County, of which 26,207 were located within the Jacksonville Beaches CCD (Table 6-10). The estimated 2014 vacancy rate in Duval County was 14.6 percent and in the Jacksonville Beaches CCD it was 14.8 percent; both rates were below the state average of 20.2 percent (U.S. Census Bureau, 2016a). The Jacksonville Beaches CCD and Duval County had a higher percentage of renters (43.2 percent and 39.7 percent, respectively) in occupied housing units than the state (33.9 percent) (U.S. Census Bureau, 2016b). Median monthly mortgage for owner-occupied homes in Duval County was $1,411 and for rental units it was $941 per month in 2014. In the Jacksonville Beaches CCD, median monthly mortgage was $1,797 per month for owner-occupied homes and $1,093 per month for rental units (U.S. Census Bureau, 2016b).

Table 6-10 Housing Units and Vacancy, 2014

Jurisdiction	***Housing Units***	***Percent Vacant***	***Occupied Housing Units***		
			Total	*Percent Owner*	*Percent Renter*
Jacksonville Beaches CCD	26,207	14.8	22,321	56.8	43.2
Duval County	391,719	14.6	334,721	60.3	39.7
Florida	9,051,851	20.2	7,217,508	66.1	33.9

Source: U.S. Census Bureau, 2016a; b.

Family housing at NS Mayport is leased and operated under a Public-Private Venture (PPV). As such, the Navy has turned over day-to-day operation and control of family housing to the PPV operator, Balfour Beatty. In this contractual relationship, Balfour Beatty is the responsible party for the future development of family housing on NS Mayport. The PPV agreement was established in 2007 and will last 50 years (until 2057); therefore, the station has limited near-term options on what they can do for on-station family housing. While there are over 1,000 family housing units on board NS Mayport, there are often wait times anywhere from 8 months to a year (NS Mayport, 2016). Due to on-station housing supply limitations, most military personnel live off station in the surrounding community.

6.7.2 Environmental Consequences

Analysis of impacts to socioeconomics focused on the effects Alternative 2 would have on population, employment and income, and housing. The study area for socioeconomics is defined as Duval County, with the Jacksonville Beaches CCD as a subset. The CCD is included because it is expected that a majority of Triton UAS personnel would likely live in this area.

NS Mayport Potential Socioeconomic Impacts:

- The No Action Alternative would not change the socioeconomic conditions currently found at NS Mayport.
- Alternative 2: The 1.7-percent increase in the population would not introduce adverse impacts.
- Alternative 2: There would be short-term beneficial economic effects during construction and long-term beneficial impacts from additional employment incomes.
- Alternative 2: Housing units (owner occupied and rental) are available for increases of personnel and their dependents in the study area.

6.7.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the socioeconomic conditions of the study area. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

6.7.2.2 Alternative 2: Naval Station Mayport, Florida

The potential impacts of Alternative 2 at NS Mayport were analyzed by considering any potential changes to socioeconomic conditions. This analysis examines how Alternative 2 would affect population (i.e., demographics), employment and income, and housing.

Population

Construction and demolition contractors primarily would be drawn from the study area's labor pool. For construction projects of this duration and magnitude, the workforce is generally composed of workers that would commute to job sites rather than relocate their households. As such, construction, demolition, and renovation activities are not anticipated to result in either an in-migration or relocation of employees to the study area to satisfy the need for temporary construction-related employment. Therefore, no increase in population would be expected from temporary construction workers relocating to the study area.

Up to 400 additional personnel would be stationed at NS Mayport on a long-term basis. Using 2014 demographic information, it is estimated that 52 percent of the 400 personnel would be accompanied by a spouse/partner, for 607 total adults (DoD, 2014c). Accompanying these adults would be 307 dependents, of which 184 children are school age (i.e., ages 5 to 18), for a total population increase of 914 individuals in the study area. This would represent an increase of approximately 1.7 percent in the total population of the Jacksonville Beaches CCD and 0.1 percent in Duval County. This long-term population increase would not significantly change demographics of the region under Alternative 2.

Employment and Income

During construction and demolition activities, short-term employment and income provided by civilian contracting firms for up to 2 years would result in beneficial impacts to the local economy due to an increase in demand for goods and services. It is anticipated that, given the market for similar goods and services, this increase in demand would not result in a scarcity of such goods and services in the study area.

Once the home basing is complete, it was estimated there would be 914 family members, of whom 207 adults were assumed to be joining the local labor market. According to the DoD 2014 Demographics Report, this would represent a less than 1-percent increase in the 2014 Jacksonville Beaches CCD workforce and 0.05-percent increase in the county workforce (DoD, 2014c). These additional workers would contribute to the regional workforce by directly stimulating the local economy. There would be a beneficial effect on the local economy due to an uptake in the local labor pool and an increase in demand for goods and services.

Housing

The Navy provides on-installation housing for eligible military personnel in either bachelor (i.e., officer or enlisted) quarters or family housing. However, on-station housing is very limited; therefore, it is assumed that all of the 400 personnel (and their dependents) would seek housing in the greater Jacksonville Beaches CCD area. Personnel living off station are granted a basic allowance for housing (BAH), which can be used to rent or purchase a home. With a housing-unit vacancy rate of more than 14 percent in both the CCD and Duval County, there are adequate, affordable units available for off-station housing. It is not anticipated that the additional demand for housing would lead to noticeable increases in housing costs. No significant impacts to housing are anticipated from implementing Alternative 2 at NS Mayport.

6.8 Transportation

Transportation resources that are addressed in this EA focus on vehicle movements on the major and minor roadways that feed into the installation, security gates, and parking areas on NS Mayport. See Section 3.8 for the resource definition, regulatory setting, and the approach to analysis.

6.8.1 Affected Environment

The affected environment for transportation includes the network of roads used by aviation and naval military personnel based at NS Mayport, operations personnel, tenants, contractors, deployed personnel, and others support services. As shown in Figure 6-4, the arterial roads providing access to NS Mayport include Mayport Road (Rd.)/State Highway A1A, the Wonderwood Drive (Dr.), and the St. Johns Ferry, which provides continuation of State Highway A1A/Heckscher Dr., north of the St. Johns River. The Florida Department of Transportation (DOT) maintains these arterial roads.

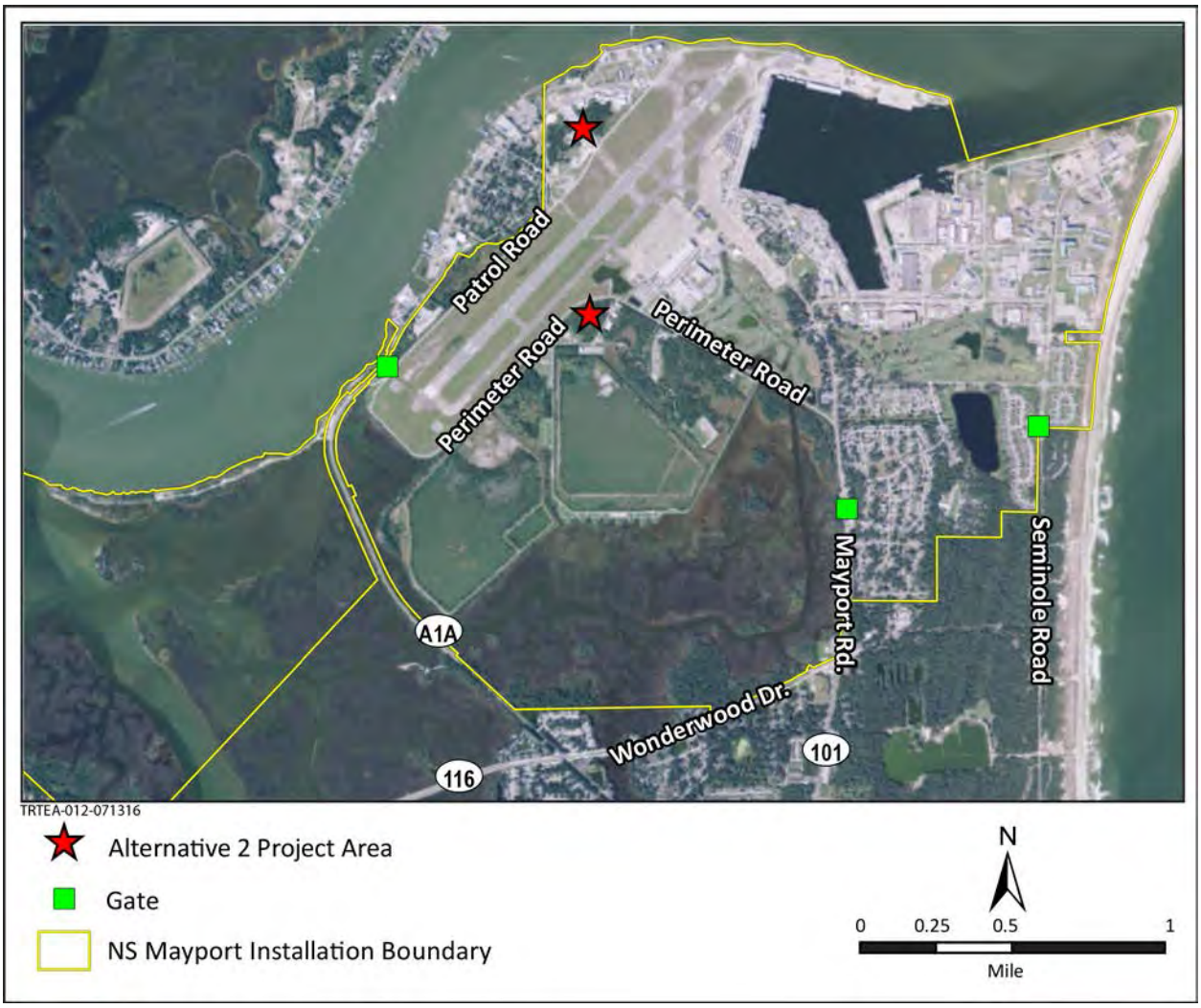


Figure 6-4 Naval Station Mayport Local Road Network

NS Mayport is bordered on the east by the Atlantic Ocean, on the north by the St. Johns River, on the west by State Highway A1A, and to the south by Wonderwood Drive. Access into the installation is currently provided at three locations: (1) the Main Gate that provides access from Mayport Road/State Route 101; (2) Seminole Gate that provides access through Kathryn Abbey Hannah Park via Seminole Road; and (3) Gate 5 that provides access from Ocean Street/State Highway A1A in the village of Mayport. Gate 5 also provides commercial traffic access. According to the Florida DOT, all major arterial roads (State Highway A1A, Wonderwood Drive, and Old Mayport Road [State Route 101]) have a Level of Service (LOS) C (Florida DOT, 2015). An LOS of C indicates that there is a stable flow of traffic but the ability to maneuver through lanes is restricted and lane changes require more driver awareness.

The Jacksonville Transit Authority has one public bus route near NS Mayport; there are three stops: the village of Mayport, the main gate at Wonderwood Drive and Old Mayport Road, and in Neptune Beach.

6.8.2 Environmental Consequences

The LOS is a factor that is considered when evaluating impacts for vehicle transportation. Another factor is contribution of additional vehicle GHGs from the action. The former factor is evaluated here for State Highway A1A, Wonderwood Drive, or Old Mayport Road (State Route 101). The latter factor, GHG emissions, was evaluated in Section 6.3.2.2.

6.8.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to transportation. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

6.8.2.2 Alternative 2: Naval Station Mayport, Florida

The affected environment includes State Highway A1A at Ocean Drive in Mayport, where access to the airfield and commercial vehicles is located at Gate 5. This is because this gate is the nearest entrance point for the proposed Triton UAS construction site. During construction, equipment would use this commercial entry gate. With the Florida DOT planned project to provide entry and merge lanes along State Highway A1A to Ocean Road, it is not anticipated that traffic on State Highway A1A would be blocked or congested and, therefore, Alternative 2 would not affect the LOS.

Once operational, Triton UAS personnel would likely use Gate 5 due to its vicinity to the Triton UAS operations facilities. Under Alternative 2, there may be minor congestion at the gate in the morning and evening peak hours. However, it is not anticipated this would lead to a reduction in the LOS for State Highway A1A. In summary, implementing Alternative 2 at NS Mayport would not result in significant impacts to transportation.

NS Mayport Potential Transportation Impacts:

- The No Action Alternative would not involve any changes in the transportation network and roadways LOS.
- Alternative 2: Construction vehicles and equipment would use the commercial traffic entrance at Gate 5. There are entry and merge lanes that would alleviate congestion on State Highway A1A.
- Alternative 2: Personnel traveling to and from the station would not cause the LOS on State Highway A1A to deteriorate. However, there may be congestion at Gate 5 during peak morning and evening hours.

6.9 Hazardous Materials and Wastes

This section discusses hazardous materials, hazardous waste, special hazards, and Defense Environmental Restoration Program (DERP) sites. See Section 3.9 for the resource definition, regulatory setting, and the approach to analysis.

6.9.1 Affected Environment

The affected environment for hazardous materials, hazardous waste, special hazards, and DERP sites consists of the area proposed for Triton UAS construction and operations at NS Mayport.

6.9.1.1 Hazardous Materials

Routine operations on NS Mayport require use of a variety of hazardous materials, including petroleum, oil, and lubricant products, solvents, cleaning agents, paints, adhesives, and other products necessary to perform ship, ground vehicle, and equipment maintenance; military training activities; facilities repair and maintenance; and administrative and housing functions (U.S. Navy, 2008a). Types of hazardous

substances found on station include solvents; batteries; hexavalent chromium (alodine), paints, paint thinners/strippers, and their contaminated media (filters, rags, rollers, wastewater, plastic and glass bead blast media); antifreeze; hydraulic fluid; petroleum, oil, and lubricants (POL) and POL-contaminated media (rags and filters); and x-ray effluent, including silver recovery. Hazardous materials used at NS Mayport are managed by their Safety Office through the regulations and procedures described in the Hazardous Materials Control and Management portion of the Occupational Safety and Health Manual and Hazardous Waste Management Plan.

6.9.1.2 Hazardous Wastes

Hazardous wastes include solid wastes that are regulated as hazardous based on either direct listing by USEPA or characteristics such as ignitability, reactivity, corrosivity, and toxicity, as well as those contaminants present in environmental media (e.g., soil or groundwater). NS Mayport is regulated as a large-quantity hazardous waste generator (i.e., over 2,205 pounds [1,000 kilograms] per month) under the Resource Conservation and Recovery Act (RCRA) (USEPA Identification No. FL9170024260). Before transport off site, hazardous wastes are collected at the Hazardous Waste Storage Facility. There are numerous Hazardous Waste Storage Areas (less than 90-day satellite accumulation areas) on NS Mayport operated by various station departments and tenant commands. As sufficient volume of waste accumulates or the designated hold time expires, the hazardous waste at the accumulation sites is transported to the Hazardous Waste Storage Facility and then collected and disposed by permitted contractors.

6.9.1.3 Special Hazards (Asbestos-Containing Materials, Lead Based Paint, Polychlorinated Biphenyls)

NS Mayport manages asbestos in shore facilities and asbestos waste in accordance with Commander, Navy Installations Command (CNIC) Instruction 5100.1, Asbestos Management Program. NS Mayport shore facilities scheduled for maintenance, renovation, remodeling, or demolition are inspected for the presence of asbestos-containing material (ACM), as required by law or as a precautionary measure when asbestos-containing material is to be removed through outside contracts by licensed specialized firms (U.S. Navy, 2008b).

Lead-based paint (LBP) is managed in accordance with OPNAVINST 5100.23F. Employees and contractors engaged in the maintenance and repair of surfaces with LBP follow procedures to minimize personal exposure to lead and risk of environmental contamination. Employees and contractors involved in maintenance and repair activities that could result in exposure to LBP attend annual training to reinforce their knowledge of engineering controls to reduce risk of exposure to lead during work activities (U.S. Navy, 2008b).

No polychlorinated biphenyls-containing equipment exists at NS Mayport following a comprehensive electrical equipment sampling and removal program conducted in the 1990s (U.S. Navy, 2008b).

6.9.1.4 Defense Environmental Restoration Program

Environmental restoration sites at NS Mayport include contaminated solid waste management units (SWMUs) and Areas of Concern (Figure 6-5). NS Mayport has 56 SWMUs and 5 areas of concern (AOCs). Fifteen of the SWMUs were determined to require No Further Action; 18 SWMUs required RCRA Facility Investigations; and 23 SWMUs required further action. The Navy has conducted investigations to determine the extent of contamination, established criteria for cleanup, and identified and evaluated remedial action alternatives and costs (U.S. Navy, 2008b).

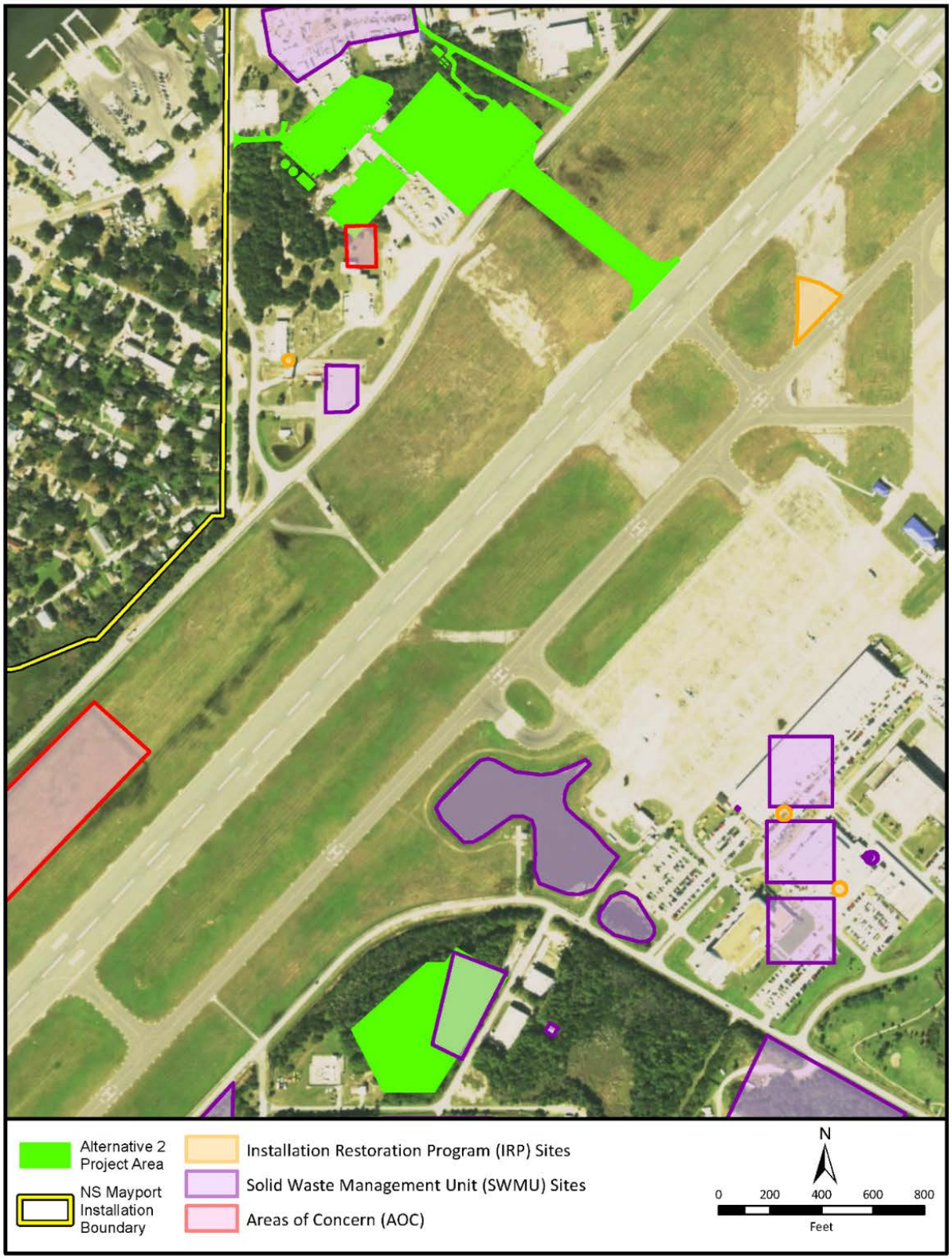


Figure 6-5 Defense Environmental Restoration Program Sites at Naval Station Mayport

6.9.2 Environmental Consequences

This section analyzes impacts related to hazardous materials, hazardous waste, special hazards, and DERP sites and the potential for these substances to be introduced into the environment during the course of construction/renovation activities and Triton UAS operations and maintenance.

6.9.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no changes associated with hazardous materials and wastes, special hazards, or DERP sites. Therefore, no changes in hazardous materials or wastes, special hazards, or DERP sites at NS Mayport with implementation of the No Action Alternative.

6.9.2.2 Alternative 2: Naval Station Mayport, Florida

Hazardous Materials and Wastes

Construction, demolition, and renovation activities would require the use of certain hazardous materials (e.g., paints, welding gases, solvents, preservatives, sealants). It is anticipated that the quantity of products containing hazardous materials used for construction, demolition, and renovation activities would be minimal and their use would be of short duration. All hazardous wastes generated from construction and demolition activities would be handled under the existing RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel. Therefore, no significant impacts to hazardous materials or waste would be expected from construction or demolition activities.

NS Mayport Potential Hazardous Material and Waste Impacts:

- The No Action Alternative would not change any hazardous materials and waste, special hazards, or DERP sites at NS Mayport.
- Alternative 2: Construction debris would be categorized and disposed according to federal, state, and local requirements.
- Alternative 2: Once operational, no new hazardous materials would be introduced to cause significant impacts.
- Alternative 2: NS Mayport's status as a large quantity hazardous waste generator would not change.
- Alternative 2: Special hazards would be handled according to established NS Mayport procedures.
- Alternative 2: Three DERP sites, SWMUs 26 and 28, and AOC 58, would be affected; however, close coordination between the installation's Environmental Restoration Program leadership, the USEPA, and FDEP would occur to avoid significant impacts.

Once home based, the maintenance of the Triton UAS would require the use of certain hazardous materials. JP-5 fuel is currently used and stored at NS Mayport in aboveground storage tanks. JP-5 fuel to support Triton UAS would be additive and not represent a new waste stream NS Mayport. It is anticipated that the quantity of products containing hazardous materials used to support Triton UAS flight operations and maintenance activities would be minimal. The quantity of hazardous wastes generated from maintenance activities would be minor and would not be expected to exceed the capacities of existing hazardous waste disposal facilities. All hazardous materials and wastes would be managed in accordance with the installation's Hazardous Wastes Management Plan. Therefore, no significant impacts to hazardous materials or waste from maintenance activities or Triton UAS flight operations would be expected.

Special Hazards (Asbestos Containing Materials, Lead Based Paint, Polychlorinated Biphenyls)

Any structures proposed for demolition would be inspected for ACM and LBP according to established NS Mayport procedures. All ACM would be properly removed and disposed of prior to or during demolition in accordance with 40 CFR part 61 and established NS Mayport procedures. Any LBP would be managed and disposed of in accordance with federal and state requirements and established NS Mayport procedures. Therefore, no significant impacts to special hazards would occur from implementing Alternative 2, NS Mayport.

Defense Environmental Restoration Program

Alternative 2 has the potential to affect SWMU 28 and AOC 58, because of construction of the Triton UAS support facilities, and SWMU 26 because of the relocation of the long-term storage area. For SWMU 28, the Statement of Basis indicates no soil or groundwater exceedances of State Cleanup Target Levels. Site AOC 58, which is located in the vacant lot adjacent to the long-term storage yard, is in the Site Assessment phase. The contaminants of concern being investigated are petroleum based. Site SWMU 26 is a known landfill that does not contain any contaminants that exceed the residential Cleanup Target Levels for soil and groundwater. Several other SWMUs are adjacent to the proposed Triton UAS facilities; however, these will be avoided during any land-disturbing activities. All applicable procedures about working at and around these sites will be followed, and close coordination among the installation's Environmental Restoration Program leadership, the USEPA, and FDEP would occur to avoid significant impacts to DERP sites if Alternative 2, NS Mayport were implemented.

7 Alternative 2: Naval Station Mayport, Florida Cumulative Impacts

7 ALTERNATIVE 2: NAVAL STATION MAYPORT, FLORIDA CUMULATIVE IMPACTS

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

Cumulative effects could result from individually minor, but collectively significant actions that take place over time. Accordingly, a cumulative effects analysis identifies and defines the scope of other actions and their interrelationship with the alternatives if there is an overlap in space and time. Cumulative effects are most likely to occur when there is an overlapping geographic location and a coincidental or sequential timing of events.

For the purposes of this analysis, the temporal span of Alternative 2 is considered the time during which construction of Triton UAS facilities would occur to the time when all Triton UAS aircraft are operating at the installation (i.e., between 2017 and 2023). For most resources, the spatial area for consideration of cumulative effects is limited to the installation on which an activity would occur, which would include NS Mayport. Past actions are those actions, and their associated impacts, that occurred within the geographical extent of cumulative effects that have shaped the current environmental conditions of the study area. CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions (Connaughton, 2005). The effects of past actions are now part of the existing environment and are included in the affected environment described in Chapter 6. However, recent past actions with continuing ongoing effects that are germane to cumulative impacts are discussed in respect to present and reasonably foreseeable future actions.

7.1 Past, Present, and Reasonably Foreseeable Actions

Based on a review of past, present, and reasonably foreseeable future actions within the study area of Alternative 2 at NS Mayport, it was determined that several actions should be considered when analyzing potential cumulative impacts.

7.1.1 Past Actions

Homeporting of Amphibious Ready Group at Naval Station Mayport. Evaluated as Alternative 5, in the Environmental Impact Statement (EIS) for the Proposed Homeporting of Additional Surface Ships at NS Mayport (U.S. Navy, 2008b), between 2013 and 2014, three ships from the Iwo Jima Amphibious Ready Group (ARG) moved from Naval Station Norfolk to NS Mayport. This action added close to 1,800 enlisted

and officer personnel, plus their family members (U.S. Navy, 2013b). Construction of the Command building took place to the east of the turning basin.

7.1.2 Present and Reasonably Foreseeable Actions

Proposed Homeporting of Littoral Combat Ships (LCS) on the East Coast. This EA evaluated the homeporting of up to 14 LCS at NS Mayport by 2020. This alternative included using a combination of existing military assets, east of the turning basin (see Figure 6-1), to provide berthing space, ship hotel services, maintenance support, drydocking facilities, fueling services, ordnance handling and storage, cargo and mission module handling and storage, support facilities, and aviation asset support. No in-water construction projects would be required (U.S. Navy, 2013a). The Navy announced in August 2014 that by 2016 six LCS would homeport at NS Mayport and approximately 900 enlisted and officer personnel as well as their family members would be added to the station and local population (navaltoday.com, 2014).

Naval Station Mayport Future Development. Future development within the geographic area (i.e., the airfield) of the Triton UAS alternative could include a structural/aircraft fire and rescue station that would combine into one facility to replace the two existing single function stations. A jet engine test cell is also identified as a potential future action. This project would construct an indoor jet engine test facility for out-of-airframe testing of helicopter engines. This project would replace the existing outdoor facility within the airfield environment.

Wastewater Treatment Plant Construction. Pursuant to the Consent Order from FDEP relating to discharges from the NS Mayport WWTF, a new facility will be constructed on the same site as the existing WWTF. The existing facility is located to the east of the turning basin. Construction of the new WWTF will be phased, to allow for maintaining current WWTF operations while building new structures and demolishing existing portions of treatment process structures. The new WWTF is anticipated to be fully operational, and fully compliant with all permit requirements, by September 1, 2020.

Homeporting of Additional Surface Ships at Naval Station Mayport. This EIS evaluated 12 alternatives, with Alternative 4, homeporting one Nuclear-Powered Aircraft Carrier (CVN) at NS Mayport by 2014, as the preferred alternative (U.S. Navy, 2008a). However, in 2013, the Congressional Research Service (CRS) indicated that the Navy's Fiscal Year 2013-2017 *Future Years Defense Plan*, did not include funding for military construction projects to homeport a CVN at NS Mayport (CRS, 2013). Once operational, now estimated after 2019, there would be an additional 3,140 enlisted and officer personnel, and their dependents associated with this action.

Evaluation of Florida and Duval County DOT, local municipalities (e.g., Atlantic Beach and Mayport, the nearest communities), and potential development plans elicited no other actions that could interact with the proposal to home base the Triton UAS at NS Mayport.

7.2 Resource Analysis

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources, quantifiable data are not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA. Following review of past, present, and reasonably foreseeable projects, the actions that would have the potential to interact with Alternative 2 would be improvement projects planned in the airfield environment on NS Mayport and personnel increases associated with the LCS, ARG, and CVN homeporting actions. According to NS

Mayport, the addition of the UAS Triton aircraft, to include personnel and their families, would not significantly impact current or future WWTF operations at NS Mayport, therefore, it would not result in significant cumulative impacts.

After evaluation of the actions that interrelate in geography and time, the following resources would most likely be affected by Alternative 2 and are carried forward for cumulative impact analysis: noise, air quality, socioeconomics, and hazardous materials and waste. Because there would be no adverse or significant impacts under Alternative 2, no cumulative effects would be anticipated when considered with past, present, and reasonably foreseeable actions, for public health and safety, biological resources, water resources, and cultural resources. These resources are therefore, not carried forward for more detailed cumulative impact analyses under Alternative 2 at NS Mayport.

7.2.1 Noise

Noise generated by activities outside of the airfield, such as boat traffic, aircraft operations, vehicle traffic, and general ambient sounds generated by horns, sirens, and construction would continue as found under existing conditions and would contribute to the overall acoustic environment. However, when considered along with Alternative 2, the noise generated by these sources would not introduce significant noise levels to affect public health.

The noise impacts from the Alternative 2 and station improvements consist of noise generated from construction, demolition, and renovation activities and Triton UAS flight operations. The improvement projects planned at the airfield would include the use of heavy equipment for site preparation and development that would result in increased noise levels within the immediate area. However, noise level increases would be temporary and typical of standard construction activities. Overall, construction activities at and within the vicinity of the airfield would collectively increase noise levels in the area temporarily, but variations in the timing of cumulative projects, and the relatively short duration of these noise effects, would moderate impacts over space and time. These negligible changes in behavior are not expected to differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Once construction is complete, abundance and frequency of wildlife occurring in the project area are expected to return to prior levels.

Cumulatively, present and reasonably foreseeable aircraft operations were accounted for in the 2006 AICUZ study (U.S. Navy, 2007). The 103,000 operations, the majority of which are rotary wing aircraft, represent what are anticipated in terms of future activities (see Section 6.1.1). Therefore, the dominant sources of noise at NS Mayport's airfield would continue to be aircraft operations. Cumulatively, no significant impacts to the acoustic environment would be expected under Alternative 2 at NS Mayport when all generators of noise are considered.

7.2.2 Air Quality

Construction activities related to Alternative 2, improvement projects on NS Mayport, and personnel increases would generate air pollutant and GHG emissions (see Section 6.3.2.2). Construction-related activities would include the use of heavy equipment for site preparation and development that would result in criteria pollutant and GHG emissions within the immediate area. However, air emissions would be temporary and typical of standard construction activities. Overall, construction activities at and within the vicinity of airfield would collectively increase air pollutant and GHG emissions in the area temporarily, but variations in the timing of cumulative projects, and the relatively short duration of project effects, would moderate impacts over space and time.

Cumulatively, construction-related air emissions would be a small percentage of overall air emissions in the Jacksonville (Florida)-Brunswick (Georgia) Interstate AQCR. These cumulative emissions would not change the attainment status of the AQCR or introduce a significant increase in GHG emissions. Therefore, the cumulative effect of these construction-related activities would not result in significant, cumulative impacts to air quality.

Once the home basing is completed, Triton UAS operations and commuting personnel would contribute less than 1 percent of criteria pollutants in Duval County (see Table 6-5). When considered cumulatively with present and foreseeable aircraft operations, the percent contribution of criteria pollutant emissions would introduce pollutant levels that would not change the attainment status of the AQCR.

Emissions of GHGs from these cumulative activities alone would not cause global warming that could lead to climate change. However, these emissions would increase the atmosphere's concentration of GHGs and could incrementally contribute to global warming.

7.2.3 Biological Resources

Vegetation

Construction and demolition activities associated with Alternative 2 NS Mayport would occur primarily in developed or already disturbed areas so when considered cumulatively, would not significantly affect vegetation. Tree plantings around the project area would replace trees removed for development purposes and in the long-term carbon dioxide sequestration would not be affected. Impacts to implementing Alternative 2 due to climate change could include increased risk of storm surges that could remove vegetation. Operationally, it is not anticipated that Triton UAS and present and reasonably foreseeable aircraft operations would cumulatively impact vegetation on NS Mayport.

Wildlife

Noise created during construction and demolition activities may result in temporary behavioral disturbance to wildlife, mostly limited to avoidance of the immediate area. However, these negligible changes in behavior are not expected to differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Once construction is complete, abundance and frequency of wildlife occurring in the project area are expected to return to prior levels. Additionally, the projects would occur in areas where wildlife may have habituated to noisy airfield activities.

When the current level of noise generated by air traffic, and the Triton UAS's relatively low SELs (i.e., the Triton UAS would introduce no more than 1 dB DNL to the noise environment), are considered along with the noise generated cars, boats, and horns, cumulative effects to wildlife in the vicinity of the project area would not be considered significant under Alternative 2, NS Mayport.

To minimize impacts to wildlife, continued adherence to BASH management projects, which include habitat modification, grassland management, wetlands management, wildlife exclusion measures, avian dispersal measures, and humane lethal control measures, would reduce the habitat attractiveness as foraging, resting, or nesting areas for birds. Other periodic BASH management projects, such as exclusion devices, removal of abandoned structures, and fence repair, would specifically discourage the presence of wildlife in close proximity to the airfield and avoid significant, cumulative impacts.

Special Status Species

As presented in Section 6.4.2.2, long-term climate change effects to special status species include increased sea levels that could cause saltwater intrusion into the freshwater system forcing some species such as sea turtles and gopher tortoises to relocate or die. Warmer springs can also lead to changes in the timing of migration, breeding, and food availability for nesting sea turtles, bald eagles, and migratory birds. As temperatures increase, habitat ranges may also shift and thus disturb the current state of the ecosystem (USEPA, 2016d).

Endangered Species Act. Under Alternative 2, when considered with past, present, and reasonably foreseeable actions, no cumulative, significant impacts are anticipated to federally listed species. Continued adherence to protective measures identified in the INRMP would ensure that federally listed species would not be significantly affected by implementing Alternative 2 (see Section 6.4.2.2).

For the gopher tortoise, a candidate for listing under the ESA, there may be a permanent loss of 7 acres of low- to moderate-quality habitat from Alternative 2 construction. No other on-station construction was identified that would cumulatively affect the tortoise. However, if potential habitat were to be disturbed, the area would be surveyed and burrows examined prior to any land disturbance to ensure that there are no gopher tortoises present. If gopher tortoises are present, then they would be handled according to the 2012 revision of the 2008 Gopher Tortoise Candidate Conservation Agreement.

Other Special Status Species

Bald Eagle. Bald eagles are observed in low numbers around NS Mayport, but no nests have been documented in the project area. There is no suitable nesting or foraging habitat in the project area when compared to other areas adjacent to the station. Therefore, Triton UAS operations, along with all other aircraft operations at the station would likely have no effects to Bald Eagles. No significant, cumulative harm or incidental takes of bald eagles are anticipated when Alternative 2 is considered along with anticipated improvement projects at

Migratory Bird Treaty Act. As mentioned in Section 6.4.2.2, potential impacts to migratory birds would be avoided by conducting a site survey of the proposed construction area prior to commencement of construction activities to ensure the absence of migratory birds or by conducting construction activities outside of the migratory bird-nesting season. Once the Triton UAS is operational, continued participation in Partners in Flight and observance of conservation and protective measures identified in the INRMP would be used to ensure that no violation of the MBTA or EO 13186 would occur from implementing Alternative 2 along with other present and reasonably foreseeable actions. No significant, cumulative harm or incidental takes of MBTA species are anticipated.

Climate Change

In terms of climate change effects to wildlife species, there could be increases in sea levels that could cause saltwater intrusion into the freshwater system forcing some species to relocate or die. Warmer springs can also lead to changes in the timing of migration, breeding, and food availability. As temperatures increase, habitat ranges may also shift and thus disturb the current state of the ecosystem (USEPA, 2016d). Impacts to implementing Alternative 2 due to climate change could include increased exposure to storm surges and flooding.

Long-term climate change effects to all special status species include increased sea levels that could cause saltwater intrusion into the freshwater system forcing some species to relocate or die. Warmer springs can also lead to changes in the timing of migration, breeding, and food availability for wood

storks, bald eagles, and migratory birds. As temperatures increase, habitat ranges may also shift and thus disturb the current state of the ecosystem (USEPA, 2016d).

7.2.4 Water Resources

Ground Water

Construction and demolition impacts to ground water from Alternative 2 and station improvements would not extend below ground surface to a depth that would affect the underlying aquifer. Although fuel or other chemicals could be spilled during construction, demolition, and renovation activities, implementation of the required SPCC Plan and immediate cleanup of any spills would prevent any infiltration into groundwater resources. Cumulatively, Alternative 2 and countywide growth would increase the population and the demand for groundwater resources. As a result of Alternative 2 implementation alone, the countywide population is estimated to grow only by 0.1 percent by 2020; while countywide population is expected to increase 14.7 percent over the same time period from other growth sources. It is anticipated that there is adequate water supply in terms of quantity within Duval County to accommodate forecasted growth. Therefore, no significant, cumulative impacts to groundwater resources are anticipated.

Surface Water

Construction and demolition activities associated with Alternative 2, runoff could result in a slight cumulative increase in turbidity. Potential impacts from an increase in turbidity would be minimized with implementation of practices such as wetting of soils, silt fencing, and detention basins and adherence to erosion and stormwater management practices, as determined by the Navy, to contain soil and in runoff on the project area. Construction and demolition activities from Alternative 2 and present and foreseeable projects are not anticipated to degrade the water quality or affect beneficial uses of surface water or groundwater resources. No significant cumulative impacts are anticipated resulting from Triton UAS operations and other present or foreseeable projects.

Climate Change

For groundwater, climate change will produce increases in sea levels, with saltwater moving into freshwater areas and affecting water quality. This could limit potable water availability to populations living in Duval County. For surface waters, the USEPA predicts that long-term, climate change will induce increased temperatures, reduce water supplies, increase water evaporation, and hotter weather will increase demand for water from humans and animals located in northwest Florida. With climate change, stormwater and waste water systems will face risks from rising sea levels and the damaging impacts of storm surges (USEPA, 2016e). Floodplains may also expand and thus expose more infrastructure to increased episodes of inundation.

7.2.5 Socioeconomics

Under Alternative 2, no significant impacts to the population and housing would occur when this alternative is considered along with other actions increasing NS Mayport personnel. This is supported by the fact that between 2006 and 2014, there has been an overall reduction of over 5,100 military personnel at NS Mayport resulting from the following:

- decommissioning the aircraft carrier USS Kennedy in 2007, which resulted in a loss of approximately 2,498 enlisted and officer personnel;

- downsizing in military personnel at the Southeast Regional Maintenance Center that resulted in a net decrease of approximately 539 ships maintenance personnel between 2006 and 2009; and
- decommissioning of 10 frigates between 2010 and 2014, which corresponded to a loss of 2,150 enlisted and officer personnel.

Under cumulative effects, there would be an additional 3,100 personnel:

- 400 from the Triton UAS Home Basing Action, Alternative 2 and
- 2,700 from the LCS and ARG homeporting actions.

These numbers would still remain below the 5,100 drawdown of personnel over the last 10 years. If the CVN action were to occur, there would be an additional gain of 3,140 more personnel (U.S. Navy, 2008a). However, according to the CRS (2013) the Navy's Fiscal Year 2013-2017 *Future Years Defense Plan*, did not include funding for military construction projects to homeport a CVN at NS Mayport. It is anticipated that construction could occur in 2019.

However, if the CVN action were implemented along with other reasonably foreseeable actions, cumulatively there would be an increase of up to 6,240 more personnel in the region. In terms of employment and income, directly, there would be a beneficial effect on the local economy due to an uptake in the labor pool and payment of payroll taxes, in the study area. Indirectly, long-term increases in demand for goods and services would occur and result in benefits to the area economy. Housing could accommodate these increases due to the vacancy rates (more than 14 percent) in the county and CCD, and there is an adequate supply of affordable housing within the greater Duval County area.

7.2.6 Transportation

Construction, demolition, and renovations for Alternative 2 and future on-station improvements would entail movement of heavy equipment and construction workers at Gate 5 that provides commercial access from Ocean Street/State Highway A1A in the village of Mayport to Patrol Road. When considered cumulatively these activities could cause temporary congestion at the gate and negligible increases in traffic. However, this increased traffic would not degrade the LOS on State Highway A1A or introduce significant congestion at the gate. Additional personnel, when Alternative 2 is considered with other personnel additions, would not degrade local highway LOS or cause increased congestion at any of the three gates. Local area traffic networks have been upgraded (e.g., the Wonderwood Road Connector) and the gates are historically accustomed to these numbers and would continue to efficiently process entry into the station (U.S. Navy, 2013a).

This conclusion is supported by the fact that historically there has been an overall reduction of over 5,100 military personnel at NS Mayport between 2006 and 2014. By implementing Alternative 2 populations would still remain below the 5,100 drawdown of personnel over the last 10 years. If the CVN action were to occur, there would be a gain of 3,140 more personnel. However, according to the CRS (2013) the Navy's Fiscal Year 2013-2017 *Future Years Defense Plan*, it did not include funding for military construction projects to homeport a CVN at NS Mayport. If this action were implemented, 1,140 more personnel would relocate to the region. However, this increase would not degrade local traffic networks because the Jacksonville Beaches CCD has experienced a -1.2 percent growth rate from 2010 to 2014 and roads were built for a larger commuting population.

Therefore, no significant, cumulative impacts are anticipated to transportation under Alternative 2 at NS Mayport.

7.2.7 Hazardous Materials and Wastes

Construction and demolition activities under Alternative 2 and on-station improvement projects would require the use of certain hazardous materials (e.g., paints, welding gases, solvents, preservatives, and sealants). However, all hazardous wastes generated would be handled under the existing RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel. Therefore, no significant, cumulative impacts to hazardous materials or waste would be expected from construction and demolition activities.

No special hazards such as ACM, LBP, or PCPs are associated with Alternative 2 but other station improvements could involve these special hazards. There would be no significant, cumulative impacts, however, from special hazards because of continued adherence to all Navy policies and USEPA directives associated with handling and disposal of these substances.

Alternative 2 would impact three SWMUs; and other DERP sites could be affected by future on-station improvement projects. Potential significant impacts would be avoided through continued adherence to the station's Environmental Restoration Program to identify, investigate, and clean up these hazardous waste disposal or release sites. Close coordination among the installation's Environmental Restoration Program leadership, the USEPA, and FDEP would occur to avoid significant, cumulative impacts to DERP sites.

8 Alternative 3: Wallops Flight Facility, Virginia Affected Environment and Environmental Consequences

8 ALTERNATIVE 3: WALLOPS FLIGHT FACILITY, VIRGINIA AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter presents a description of the environmental resources and baseline conditions that exist along with the potential environmental consequences that could occur by implementing Alternative 3 at the National Aeronautics and Space Administration (NASA) Wallops Flight Facility (WFF), Main Base.

8.0 Scope of Impact Analysis

All potentially relevant environmental resource areas were initially considered for analysis in this Environmental Assessment (EA). In compliance with the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ), NASA NEPA Regulations (14 CFR 1216), NASA Procedural Requirements (NPR) for Managing NEPA (NPR 8580.1), and 32 Code of Federal Regulations (CFR) part 775 requirements, the discussion of the affected environment (i.e., baseline conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

"Significantly," as used in NEPA, requires considerations of both context and intensity. Context means that the significance of an action must be analyzed using several factors such as society as a whole (e.g., human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of a proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant (40 CFR part 1508.27). Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be in order to be considered significant. Likewise, the less sensitive the context, the potential impact would need to be more intense to be significant.

The following identifies the resource areas whose impacts were considered negligible or non-existent; therefore, they were not analyzed in detail for Alternative 3 at WFF. These resources are airfield and airspace management, land use, infrastructure and utilities, recreation, community/emergency services, environmental justice, visual/aesthetic resources, and soils and topography. Cultural resources were also not analyzed in detail, the Virginia State Historic Preservation Office (SHPO) concurred with the Navy/NASA determination of no effects to historic properties.

Airfield and Airspace Management: Construction activities (Figure 8-1) associated with this alternative would occur within the developed, interior airfield area adjacent to Runways 10/28 and 17/35. These activities would not conflict or restrict existing airfield operations, as construction vehicle traffic would remain on vehicular paved surfaces and within parking areas. The addition of approximately five Triton UAS flight operations per day would equate to a maximum of 1,825 aircraft operations annually (based on 365 flying days) or 3.1 percent of total airfield operations. The Triton UAS would come straight in to land, and straight out to take off; no closed pattern work would be conducted by this aircraft. Operationally, Alternative 3 would not affect the existing capacity of the airspace to support this negligible increase in flights.

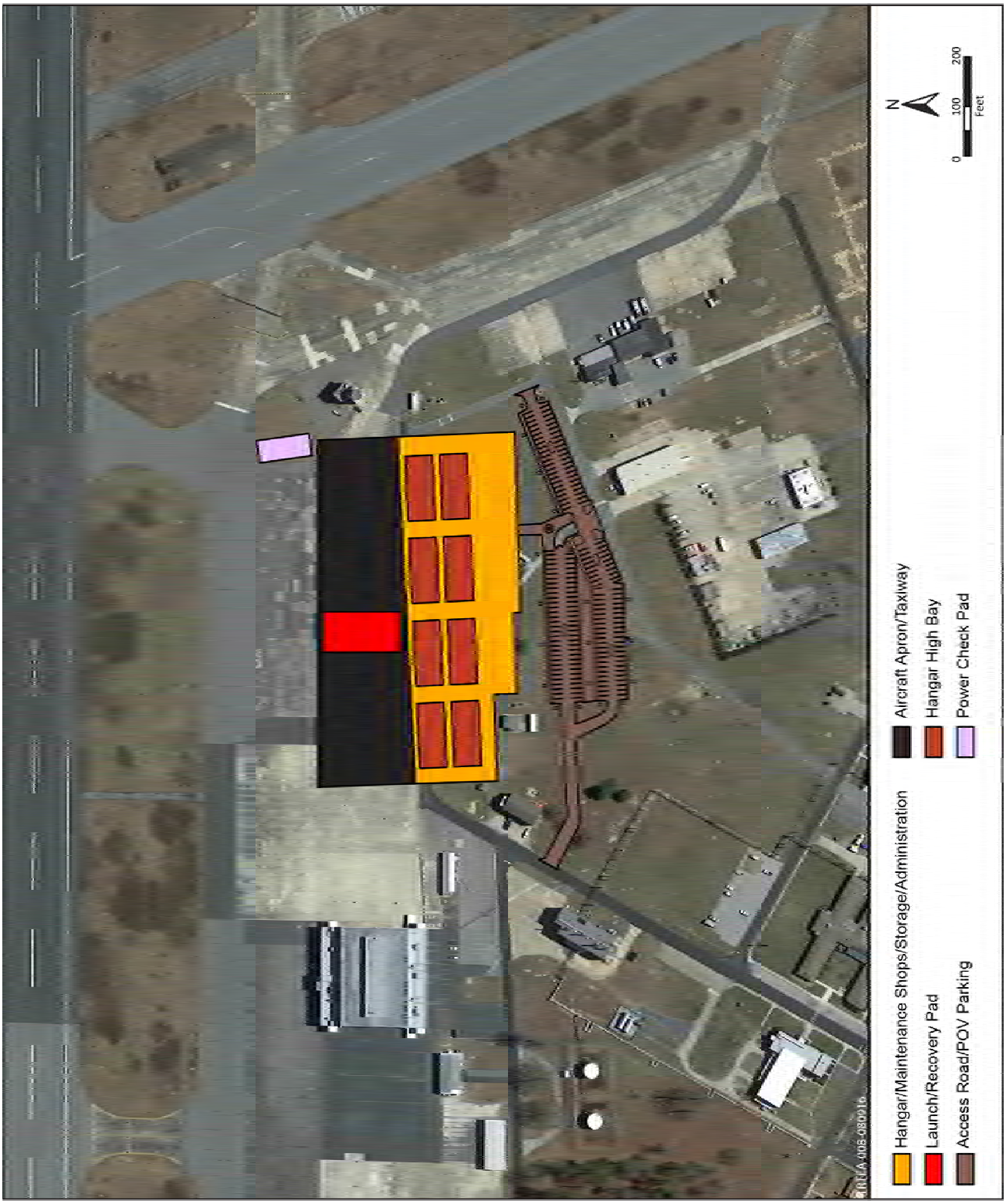


Figure 8-1 Wallops Flight Facility Proposed Construction

In 2012, the Navy analyzed 61,000 annual airfield operations (i.e., takeoffs, landings, and touch-and-goes) at the installation under Alternative 2 of the E-2/C-2 Field Carrier Landing Practice Operations EA (United States Department of the Navy [U.S. Navy], 2013). In 2015, the WFF airfield supported 41,486 total annual airfield operations (NASA, 2015a). The addition of 1,825 annual Triton UAS operations would raise this total to 43,311 annual operations. A 3.1-percent increase would not impair the ability of the Washington, DC Air Route Traffic Control Center (ARTCC) to coordinate flights within airfield environment or in the adjacent controlled airspace. Triton UAS aircraft would be under pilot control at all times and with adherence to existing flight rules, and continued coordination with ARTCC would preclude conflicts with local air traffic.

Alternative 3 would not involve the creation or modification of any special use airspace. Triton UAS would take off from the airfield, fly in restricted airspace, travel over water, and climb to an altitude of approximately 58,000 feet above mean sea level. The Navy would obtain the appropriate Certificate of Authorization from the Federal Aviation Administration (FAA) before Triton UAS flight operations would be conducted at the airfield. Therefore, no impacts to airfield or airspace management would be expected and no further detailed examination of this resource is carried forward under Alternative 3 at WFF.

Land Use: The area around the WFF airfield is largely developed, consists of various land uses, and zoned industrial by Accomack County (Accomack County, 2014). Most acreage is dedicated to airfield operations. The proposed construction site is located within the developed area between Runways 10/28 and 17/35 where no prime farmland is located. There is a large area of undeveloped land along the eastern boundary of the WFF, but this is predominately marshlands. Land use surrounding WFF is predominately zoned agricultural, with rural farmland and small villages making up the majority of the surrounding areas. Triton UAS airfield operations would be similar to UAS flight operations currently occurring at the airfield. As such, implementing Alternative 3 would not affect existing land uses or require a change in land use designation for the areas surrounding the WFF. No impacts to land use on or off the installation would be expected. As such, the Navy has omitted further detailed examination of this resource for Alternative 3 at WFF.

Infrastructure and Utilities: The current utility infrastructure at WFF is under capacity. The population growth associated with Alternative 3 would increase demand on the utility infrastructure supplying power, water, wastewater treatment, and waste disposal to the WFF and Accomack County. However, the 2.5-percent increased population and demand would not exceed the current capacity of the infrastructure and utilities at WFF or the county. Therefore, only negligible impacts to infrastructure and utilities would be expected and the Navy has omitted further detailed examination of this resource for Alternative 3 at WFF.

Recreation: There are no recreational resources located at or adjacent to the proposed construction site at WFF. Furthermore, this alternative would not involve any activities that would alter recreational areas or impact recreational activities at or adjacent to the proposed facility. Triton UAS-generated noise levels would add no more than 1 decibel (dB) Day-Night Average Sound Levels (DNL), therefore, the acoustic environment would not be perceptibly different than existing conditions if Alternative 3, WFF were implemented. No impacts, therefore, would be expected and the Navy has omitted further detailed examination of recreation for Alternative 3 at WFF.

Community/Emergency Services: *Educational Services.* Accomack County has five elementary schools, two middle schools, and three high schools. It is estimated that Alternative 3, WFF would add

approximately 184 more children to the Accomack County School District. Children would be divided among the three school age groups (elementary [42 percent], middle [7 percent], and high [11 percent]). According to the Accomack County Public School Capital Improvement Plan, the five elementary schools had an averaged utilization rate of 89 percent in 2014/2015, and it projected that this utilization rate would decrease in the 2018/2019 timeframe. The addition of 130 students would introduce negligible impacts to local elementary schools. The two middle schools had utilization rates of 73 percent and 82 percent in 2014/2015, and it is projected that these utilization rates would rise slightly in the 2018/2019 timeframe. The middle schools have the capacity to support the anticipated 22 additional students under Alternative 3. The three high schools had an averaged utilization rate of 77 percent and it is projected the utilization rates would decrease in the 2018/2019 timeframe (Accomack County, 2015a). The high schools have the capacity to support an additional 33 students anticipated under Alternative 3. Therefore, only negligible impacts would be expected to educational services.

Health Services. Three local emergency medical service facilities are located on Chincoteague Island, near WFF: the Chincoteague Community Health Center, Chincoteague Island Medical Center, and the Atlantic Community Health Center located in Oak Hall, Virginia. In addition, WFF has its own health unit with a full-time nursing staff and a full-time physician to provide first aid and immediate assistance in case of emergencies. After-hours emergency medical care is provided by Emergency Medical Services staff of the WFF Fire Department (NASA, 2016a). No adverse impacts to health services would be anticipated if Alternative 3 were implemented. This is because there is existing capacity at the installation and in the county to support an additional 914 people (or 2.5 percent increase in Accomack County population).

Emergency Services. The WFF Fire Department provides fire, crash, and rescue response to the facility along with emergency services to the neighboring community. The WFF Fire Department also has a Mutual Aid Agreement with the Accomack-Northampton Fireman's Association for any outside assistance needed at WFF (NASA, 2008a). The local fire companies closest to WFF are in the towns of Atlantic, Chincoteague, and New Church, Virginia. WFF Fire Department personnel are housed in two buildings on the facility, one on the Main Base and one on Wallops Island. No adverse impacts would be anticipated to emergency services because there is existing capacity at the installation and in the county to support an additional 914 people (or 2.5 percent increase in Accomack County population). Accordingly, the Navy has omitted further detailed examination of community/emergency services for Alternative 3 at WFF.

Cultural Resources: Of the nine archaeological sites identified on WFF, four are located on the Main Base (Table 8-1). Three of the sites have been recommended as ineligible for listing in the National Register of Historic Places (NRHP) and the fourth site was not subject to further archaeological review because it is located in a protected area not planned for development (NASA, 2015b).

Table 8-1 Known Archaeological Sites on Wallops Flight Facility Main Base

Site Number	*Site Type*	*Location*	*NRHP Eligible?*	*Cultural Period*
44AC0103	Matthews House and associated grave/cemetery	Main Base	Not Determined	18th Century (circa 1788)
44AC0405	Artifact scatter	Main Base	No	19th Century
44AC0437	Artifact scatter	Main Base	No	18th and 19th Centuries
44AC0556	Trash pit and funerary, single grave	Main Base	No	Late Woodland and 19th Century

Source: NASA, 2015b.

Historic resources eligibility surveys conducted at WFF in 2004 and 2011 determined there were no eligible historic districts within the facility. Additionally, these surveys determined that none of the buildings and structures inventoried on the Main Base was individually eligible for listing in the NRHP. The Virginia SHPO concurred with the 2004 and 2011 eligibility determinations (Virginia Department of Historic Resources, 2004; 2011). Currently, no resources of traditional, religious, or cultural significance to Native American tribes have been identified within the Area of Potential Effects.

In December 2014, a Programmatic Agreement among NASA, the Virginia SHPO, and the Advisory Council on Historic Preservation, in consultation with Native American tribes, regarding the management of facilities, infrastructure, and sites at WFF, was executed (NASA, 2014a). The Programmatic Agreement set forth a streamlined process for NASA's compliance with Section 106 of the National Historic Preservation Act, when the agreed upon criteria are met and procedures in the Agreement are followed. Appendix G of the Programmatic Agreement defined activities with limited potential to affect historic resources including ground disturbance in areas modeled with low archaeological sensitivity and new construction that does not directly impact or alter identified archaeological sites.

Under Alternative 3, no listed or potentially eligible for listing historic properties are found at or near the area proposed for construction. The Virginia SHPO concurred with the Navy and NASA conclusion of no effects to historic properties on August 10, 2016 (see Appendix B for the correspondence).

No archaeological sites would be affected by implementing Alternative 3; however, in the event that intact subsurface cultural resources are inadvertently discovered during construction or demolition activities, work would cease, the cultural resources would be evaluated for NRHP eligibility, and consultation would continue per 36 CFR parts 800.4 to 800.6. The WFF Environmental Management Division would follow the procedures outlined in the ICRMP as well as Stipulations VII, VIII, XI, XII, and XIII of the Programmatic Agreement (NASA, 2014b). No traditional cultural properties have been recognized within the Area of Potential Effects.

Accordingly, no further analysis of cultural resources is conducted for Alternative 3 at WFF.

Environmental Justice: Construction and demolition activities associated with this alternative would occur entirely within the fence line of the WFF Main Base. Noise, safety, and health conditions affecting low-income and minority populations, as well as the elderly and children would not change perceptibly from those currently found at and around the airfield. Additionally, noise levels generated by the Triton UAS would not perceptibly change from baseline conditions. This alternative would not involve any activities (e.g., noise, air emissions, or safety hazards) that would disproportionately affect minority or low-income populations, children, or the elderly (Executive Order [EO] 12898, *Environmental Justice for Low Income and Minority Populations* and EO 13045, *Protection of Children from Environmental Health*

Risks and Safety Risks). Therefore, environmental justice for Alternative 3 at WFF is not carried forward for detailed examination.

Visual/Aesthetic Resources: The WFF is composed primarily of runways, hangars, and office and storage buildings. Visually, construction and demolition activities associated with this alternative would result in facilities that would be consistent with the current characteristic features of the airfield, and surrounding areas and landscape of the facility. Additionally, there are no historic buildings found adjacent to the proposed construction site to create aesthetic conflicts. The design of new structures would adhere to Navy and NASA building guidelines and standards. Once operational, the introduction of Triton UAS aircraft would not change the visual aspect or aesthetic values at an already active airfield. Therefore, no impacts to visual or aesthetic resources would be expected under Alternative 3 at WFF, and this resource category is not carried forward for detailed examination.

Soils and Topography: The WFF is located within the Atlantic Coastal Plain Physiographic Province. The area is underlain by approximately 7,000 feet of sediment. The two uppermost stratigraphic deposits at WFF are the Yorktown Formation and the Columbia Group. The predominant soil types at the installation include Bojac fine sandy loam found in the inland areas and Molena loamy sand found along the perimeter areas. These soils are high in sand content, resulting in a highly leached condition, an acidic pH, and a low natural fertility (U.S. Department of Agriculture [USDA], 2013). The soil type within the project construction site consists of Bojac fine sandy loam with typical slopes of 0 to 2 percent. This soil is nearly level, very deep, and well drained. This alternative would occur in areas already covered by pavement or where soils have been previously disturbed by past development. Implementing best management practices to stabilize soils and control sedimentation during construction and demolition activities would minimize potential impacts from erosion and sedimentation into receiving water bodies. No prime farmland soils are mapped at the site, and no in-water construction would occur to produce marine sediments. Construction and demolition activities associated with this alternative would not significantly alter the soils or topography of the installation. The majority of the proposed construction site is located on paved, developed, or landscaped areas. Therefore, no impacts to soils or topography would be expected. Accordingly, the Navy has omitted further detailed examination of soils and topography for Alternative 3 at WFF.

8.1 Noise

This section discusses the existing ambient sound environment within and around WFF (i.e., the affected environment) and the potential impacts home basing the Triton UAS would have on this environment. Refer to Section 3.1 for the resource definition and approach to analysis. Noise in relation to natural resources, including wildlife, is discussed in Section 8.4.

8.1.1 Affected Environment

The affected environment includes those areas and receptors exposed to noise generated at the WFF airfield. While noise generated from activities at the airfield is the primary focus, rocket launches at the WFF launch range located on Wallops Island are a major source of noise at WFF. However, flight operations are the primary source of noise generated at the WFF airfield. Existing conditions comprise those presented in Alternative 2 of the E-2/C-2 Field Carrier Landing Practice Operations EA (U.S. Navy, 2013), are incorporated by reference, and include 61,000 annual airfield operations. These operational numbers include existing and anticipated future operations at the WFF airfield. In 2015, WFF had 41,486 total annual airfield operations (NASA, 2015a). Aircraft conducting flight operations at WFF airfield are dominated by the FA-18s and E-2s/C-2s.

Table 8-2 presents the Sound Exposure Level (SEL) of commonly operated aircraft at the airfield. The SEL measurement assumed the aircraft are directly over the receptor and is presented at varying altitudes. The SEL provides the best representation of what people generally and immediately respond to when an aircraft flyover occurs. As indicated, the E-2/C-2 generates an SEL of about 92.9 dB at an altitude of 1,000 feet above ground level (AGL), the probable altitude of the aircraft when it passes outside of the installation's boundaries. The SELs for other aircraft at the same altitude range from 92.5 dB for the C-130 to 110.5 dB for the C-40. In comparison, the Triton UAS creates an SEL of 82.7 dB at 1,000 feet AGL.

Table 8-2 Representative Sound Exposure Level for Common Aircraft Departures at the Wallops Flight Facility Airfield

Aircraft[1]	*In dB*		
	500 feet AGL	*1,000 feet AGL*	*2,000 feet AGL*
E-2/C-2	97.5	92.9	88.0
C-130	97.8	92.5	86.6
C-40[2]	115.5	110.5	105
A-10	102.6	96.2	88.5
Triton UAS[3]	87.5	82.7	76.7

Source: SELCalc2 (U.S. Air Force, 2002).
Notes: [1]All modeled as departures in takeoff power engine setting.
[2]Modeled using Boeing 737-D9.
[3]Modeled using a Cessna Citation X, which has the same basic Rolls-Royce AE 3007 engine as the Triton UAS. While the Triton UAS has a single engine, the Citation X has two engines so the SEL for the Citation X is approximately 3 dB greater than the Triton UAS but should share a similar frequency spectrum, making for a conservative surrogate.

8.1.2 Environmental Consequences

Analysis of potential noise impacts includes estimating likely noise levels from Alternative 3 and determining potential effects to the human and natural environment.

WFF Potential Noise Impacts:

- The No Action Alternative would not change the existing noise environment at WFF.
- Alternative 3: Construction noise would be short-term and would not affect areas outside of installation boundaries.
- Alternative 3: A less than 1 dB DNL increase in noise levels from Triton UAS operations would likely not be noticeable; therefore, negligible impacts to the acoustic environment.

8.1.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to existing noise levels. Therefore, no changes to the noise environment would occur with implementation of the No Action Alternative.

8.1.2.2 Alternative 3: Wallops Flight Facility, Virginia

The affected environment for Alternative 3 includes those areas and receptors exposed to construction- and aircraft-generated noise at WFF.

Construction Noise

Construction noise is generated by the use of heavy equipment on job sites and is generally short-term in duration (i.e., during specific times in the day and certain phases of renovation, demolition, and/or construction). Commonly, heavy equipment operation occurs sporadically throughout daytime hours.

Table 8-3 provides a list of representative construction equipment and associated noise levels in dB, adjusted for the percent of time the equipment would typically be operated at full power at a construction site, from a distance of 50 feet. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment, which are typically impact devices (e.g., jackhammers). Under Alternative 3 at WFF, noise impacts would vary based on the construction phase and by the specific task being undertaken (U.S. Environmental Protection Agency [USEPA], 1971). For instance, demolition and construction activities typically involve bulldozers and jackhammers; bulldozers, scrapers, backhoes, and trucks are used during excavation, land clearing, and grading; backhoes are involved in utility installation; and concrete mixers, pumps, saws, hammers, cranes, and forklifts are employed during building construction.

Table 8-3 Predicted Noise Levels for Construction Equipment

Equipment Description	*Actual Measured Maximum Sound Level (dB) at 50 feet*
Clearing and Grading	
Flat Bed Truck	74
Dump Truck	76
Roller	80
Dozer	82
Grader/Scraper	84
Excavation	
Front End Loader	79
Pneumatic Tools	85
Jackhammer	89
Building Construction	
Compressor (air)	78
Concrete Mixer Truck	79
Crane/Generator/Pump	81
Warning Horn	83
Chain Saw	84
Vibrating Hopper	87
Concrete Saw/Impact Hammer	90

Source: Federal Highway Administration [FHWA], 2006.

Typically, the dB level of a sound decreases (or attenuates) exponentially as the distance from the source increases. For a single point source, like a bulldozer, the sound level decreases by approximately 6 dB for each doubling of distance from the source where no other features such as vegetation, topography, or walls absorb or deflect the sound. For example, at 50 feet a bulldozer generates a noise level of 82 dB, at 500 feet this level would decrease to about 54 dB and generate noise levels that would not likely be distinguishable within the acoustic environment. Additionally, building walls can attenuate noise levels by 35 to 50 dB and windows from 25 to 35 dB (FHWA, 2011).

The nearest receptor is the NASA Visitor Center located approximately 2,600 feet from the proposed construction site. Given this distance, the noise generated by a bulldozer would not be perceptible to individuals around or inside the Visitor Center. Therefore, construction-related noise levels would not introduce significant impacts if Alternative 3 at WFF were implemented.

Operations Noise

The addition of approximately five Triton UAS flight operations per day would equate to 1,825 flight operations annually, which would represent a 3.1 percent increase in existing annual operations at the WFF airfield. This percent increase would change noise levels by less than 1 dB DNL. As presented in Section 3.1.1, a change of 3 dB is barely noticeable to the human ear (Berrendt et al., 1976); therefore, a less than 1-dB increase in DNL would likely not be noticeable. When compared to the other aircraft commonly operating out of the airfield, the Triton UAS has lower SEL upon takeoff (see Table 8-2) and only arrives or departs the airfield five times per day, considerably less than existing aircraft operations.

Potential impacts to the noise environment from Triton UAS flight operations would be negligible, as the Triton UAS would spend relatively little time operating in the airfield environment. The Triton UAS would conduct straight-in approaches and straight-out departures, would not conduct any closed-pattern operations, and would primarily depart and arrive over the ocean. The Triton UAS flight operations would not include low-approaches or touch-and-go maneuvers, which are common with fixed-wing aircraft types. Therefore, implementing Alternative 3 at WFF would result in negligible impacts to the airfield noise environment.

8.2 Public Health and Safety

As identified in Section 3.2.3, public health and safety in this EA addresses flight safety or aircraft mishaps, bird/animal aircraft strike hazards (BASH), as well as accident potential zones (APZs). Weapons and construction safety are not addressed because no weapons are associated with the Proposed Action to home base Triton UASs on the East Coast. Construction activities would be compliant with all relevant occupational health and safety and anti-terrorism/force protection requirements.

8.2.1 Affected Environment

The affected environment for public health and safety includes the WFF airfield and the adjacent airspace.

8.2.1.1 Aircraft Mishaps

Aircraft mishaps could be caused by mid-air collisions with other aircraft or objects, weather difficulties, mechanical failures, pilot error, or wildlife-aircraft strikes. This analysis considers mishaps in the context of two primary ongoing programs at WFF that address airfield safety:

- NASA's Aviation Safety Program aims to protect the health, safety, and welfare of individuals living near a NASA airfield while preserving the operational capability of the airfield.
- WFF has an established Aviation Safety Program that is overseen by an Aviation Safety Council and coordinated by an on-site Aviation Safety Officer.

In the unlikely event of an aircraft emergency or mishap, the WFF maintains emergency and mishap response plans to guide responses to an aircraft incident (to include its own search and rescue plan), should one occur. These plans assign agency responsibilities and prescribe functional activities necessary to react to mishaps, whether on or off the installation. Response would normally occur in two phases. The initial response focuses on rescue, evacuation, fire suppression, safety, elimination of explosive devices, ensuring security of the area, and other actions immediately necessary to prevent loss of life or further property damage. The second phase is the mishap investigation, which involves an array of organizations whose participation would be governed by the circumstances associated with the mishap and actions required to be performed.

8.2.1.2 Accident Potential Zones

Although the likelihood of an aircraft mishap is remote, NASA identifies APZs to assist in land use planning. These zones are not predictors of accidents; however, if an aircraft mishap were to occur, there is expected to be a higher probability of occurrence of the mishap within an APZ. These zones are delineated based on historical data and departure, arrival, and pattern flight tracks on and near airfield runways. The WFF runways have three APZs: the Clear Zone, APZ I, and APZ II (Accomack County, 2015b). The Clear Zone is the area where a mishap is most likely to occur, if one was to occur. APZ I delineates an area where mishaps are less likely to occur when compared to the Clear Zone. APZ II identifies an area where mishaps are even less likely to occur when compared to APZ I.

8.2.1.3 Bird/Animal Aircraft Strike Hazard

An important component of aviation safety at WFF is its ongoing BASH program, also referred to as the Wildlife Hazard Management Plan program. The purpose of the program is to mitigate both short- and long-term hazards to aviation. Since 2001, the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service's Wildlife Services Division has maintained a full-time presence at WFF to disperse and remove birds and mammals from the airfield. Program objectives include reducing the attractiveness of WFF to birds and wildlife by minimizing food sources, nesting sites, and roosting habitat within the airfield clear zones. USDA personnel regularly implement various management techniques within and adjacent to the WFF airfield, which can include: identifying and manipulating species habitat and roosts, employing techniques to disperse species, and, if deemed necessary, removal of birds and/or mammals that pose a hazard to human health and aviation safety under appropriate federal and state permits (NASA, 2014b).

8.2.2 Environmental Consequences

This public health and safety analysis addresses issues related to the health and safety of military personnel and civilians living on or near the airfield. Specifically, this section provides information on hazards associated with potential Triton UAS aircraft mishaps, APZs, and BASH. Please note, however, that there is no generally recognized threshold for air safety, which defines acceptable or unacceptable conditions. Therefore, the focus of airfield and airspace managers is to reduce safety risks through a number of measures, including providing and disseminating information to airfield/airspace users, requiring appropriate levels of training for those using the airfield/airspace, setting appropriate standards for equipment performance and maintenance, defining rules governing the use of the airfield/airspace, and assigning appropriate and well-defined responsibilities to Air Traffic Controllers, airspace managers, and pilots. When these measures are implemented, safety risks are minimized, even though they cannot be completely eliminated.

Weapons and construction safety are not addressed in this analysis. No weapons are associated with the Proposed Action and construction/demolition activities would be compliant with all relevant occupational health and safety and anti-terrorism/force protection requirements.

8.2.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to public health and safety. The FAA will continue to be responsible for ensuring safe and efficient use of federal airspace by military and civilian aircraft. To fulfill these requirements, the FAA has established safety regulations, airspace management guidelines, a civil/military common system, and cooperative activities with NASA. Therefore, no impacts are anticipated by implementing the No Action Alternative.

WFF Potential Public Health and Safety Impacts:

- The No Action Alternative would not change existing conditions for public health and safety environment at WFF.
- Alternative 3: No measurable changes to mishap risk would occur at the airfield.
- Alternative 3: The 3.1 percent increase in aircraft operations would not necessitate changes to existing APZ boundaries.
- Alternative 3: Implementation of existing BASH avoidance procedures would minimize BASH risk to negligible levels.

8.2.2.2 Alternative 3: Wallops Flight Facility, Virginia

All Triton UAS flight operations would be conducted in accordance with FAA regulations and directives, specific operating manuals, and DoD Flight Information Publications. All emergencies or malfunctions associated with flight operations would be handled in accordance with established aircraft-specific procedures. In addition, existing standard operating procedures at WFF would be employed to ensure appropriate airspace management by all participating aircraft, which would reduce the potential for mid-air collisions. Existing emergency response plans would be updated as necessary to account for any specific requirements of the Triton UAS.

Aircraft Mishaps

Implementing Alternative 3 would not measurably affect mishap risks at WFF. The total number of annual operations conducted at WFF would increase by 1,825 (approximately 3.1 percent) with the addition of Triton UAS flight operations. This minor increase in operations would not be expected to increase the risk of mishaps.

Additionally, Triton UAS pilots receive extensive training prior to controlling actual aircraft flights. This includes extensive practice of emergency procedures to minimize the potential for aircraft mishaps. The Triton UAS is also designed with multiple redundant systems and is programmed to perform predetermined maneuvers should communication with the aircraft be interrupted. These maneuvers could include programed flight parameters such as flying to a predetermined location and circling at a prescribed altitude until communication is restored. These maneuvers would minimize mishap risks. Therefore, no significant impacts to public health and safety from aircraft mishaps or mishap responses would be expected under Alternative 3.

Accident Potential Zones

Triton UAS aircraft would operate on either Runway 10/28 or Runway 04/22 for launch and recovery. Alternative 3 would have no effect on the existing runways or the need to provide for fixed-wing aircraft APZs I or II. This is because total operations would remain below the 5,000 annual fixed-wing threshold to indicate the need for such APZs. No changes to existing APZ boundaries or new APZs are anticipated if Alternative 3 at WFF were implemented.

Bird/Animal Aircraft Strike Hazard

Under Alternative 3, the increase in 1,825 annual flight operations is not expected to differ noticeably from existing conditions. The WFF Wildlife Hazard Management Plan is designed to minimize the occurrence of BASH incidents within the airfield environment (NASA, 2014b). Procedures are in place to identify increased risks and provide decision aids to aircrews in judging whether to alter or discontinue flying operations as necessary. For instance, Air Traffic Control issues bird hazard warnings whenever bird activities are observed and Flight Planning is notified and current conditions posted so that all aircrews are aware of potential BASH issues at the airfield. The risk of BASH incidents is not expected to change substantially because all Triton UAS aircrews would continue to follow applicable procedures and Triton UAS pilots would adhere to the WFF's existing standard operating procedures for flight from the airfield. The number of flight operations would also remain similar to existing conditions and therefore, no significant BASH impacts would be anticipated if Alternative 3 were implemented.

8.3 Air Quality

A region's air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions (see Section 3.3 for the resource definition, regulatory setting, and approach to analysis). Most air pollutants originate from human-made sources, including mobile sources (e.g., airplanes, cars, trucks, buses) and stationary sources (e.g., factories, refineries, power plants), as well as indoor sources (e.g., some building materials and cleaning solvents). Air pollutants are also released from natural sources such as forest fires and volcanic eruptions.

8.3.1 Affected Environment

The affected environment for the air quality analysis includes the Northeastern Virginia Intrastate Air Quality Control Region (AQCR), which comprises 26 counties. However, for this analysis, the focus for air quality impacts is Accomack County where the WFF is located. The Virginia Department of Environmental Quality (DEQ) is responsible for implementing and enforcing state and federal air quality regulations in Virginia. It has adopted the National Ambient Air Quality Standards (NAAQS) as presented in Table 3-2. Accomack County is classified by the USEPA as unclassified/attainment for all criteria pollutants. Therefore, a General Conformity evaluation is not required for federal actions in this county.

The most recent emissions inventory for Accomack County and WFF Main Base are shown in Table 8-4. Volatile organic compounds (VOCs) and nitrogen oxides (NO_x) emissions are included because they are precursors of ozone. Please note that the 2011 Accomack County data are the most recent published from the USEPA, National Emissions Inventory, version 2 (USEPA, 2016a).

Table 8-4 Wallops Flight Facility Main Base Permit Limits and 2014 Annual Air Pollutant Emissions Compared to Accomack County

Location	*Air Pollutant Emissions (Tons/Year)*					
	VOCs	*CO*	*NO_x*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
Accomack County[a]	4,098.04	14,408.30	2,959.99	1,145.81	393.67	2,370.54
WFF Main Base Emissions[b]	0.70	1.34	2.38	0.21	0.02	0.02
E-2/C-2 Mobile Emissions[c]	3.81	13.16	64.01	2.89	28.6	28.6
Percent Contribution of Emissions in Accomack County	*0.11*	*0.10*	*2.24*	*0.27*	*7.27*	*1.21*

Sources: [a]USEPA, 2016a; [b]Virginia DEQ, 2016; [c]U.S. Navy, 2013.
Legend: CO=carbon monoxide; SO_2=sulfur dioxide; and PM_{10} and $PM_{2.5}$=Particulate Matter 10 or 2.5 in size.

The WFF is regulated as a synthetic minor source (a source whose potential to emit is restricted to less than a major source threshold) for air pollutants. WFF maintains two synthetic minor operating permits (a permit restricts a source's potential to emit so that it is a synthetic minor source), one for the Main Base and one for the combined Mainland and Wallops Island. The Main Base holds Virginia Synthetic Minor Source Permit Number 40217 Aerometric Information Retrieval System (AIRS) Facility Subsystem Identification Number 51-001-0005 (April 18, 2005, as amended).

Climate Change

In terms of greenhouse gases (GHG), (see section 3.3.2.4 for definition and description), carbon dioxide equivalent (CO_2e) stationary emissions in Accomack County were inventoried at 101,396 metric tons in 2010 (USEPA, 2016b). Please note that data for mobile sources are not published by the county or USEPA, so actual GHG emissions would be more than the approximate 101 thousand metric tons indicated above. In the southeast, climate change is causing warmer temperatures, sea level rise, and increased incidents of seawater flooding for coastal communities (USEPA, 2016c). Additionally, sea level rise is expected to contribute to increased hurricane activity and storm surge, which in turn increases the salinity of estuaries, coastal wetlands, tidal rivers, and swamps (USEPA, 2016c). In fact, the National Oceanic and Atmospheric Administration (NOAA) has estimated that sea levels will rise a minimum of 8 inches to a maximum of 6 feet by the year 2100 (NOAA, 2012).

In response, the Accomack-Northampton Planning District Commission and Mid-Atlantic Regional Ocean Council are coordinating efforts among local, state, and federal representatives of government, aquaculture, agriculture, and community organizations to better plan for the risks associated with climate change and sea level rise. Efforts have included training and outreach programs on ground water hydrology, developing a hazard mitigation plan for local governments, and teaming with local community members in planting native trees (Accomack-Northampton Planning District Commission, 2016). Additionally, WFF is in the process of forming the Mid-Atlantic Coastal Resilience Institute. The Institute develops and implements adaptation strategies for a climate resilient Eastern Shore through resource and data sharing. Outputs of the institute’s research are expected to be the most accurate and complete information to support applied science and policy related to coastal resilience in the context of sea level rise, extreme weather events, and coastal ecosystem degradation in the Mid-Atlantic.

8.3.2 Environmental Consequences

Effects on air quality are based on estimated direct and indirect emissions associated with the action alternatives. Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations. The study area for air quality impacts is Accomack County.

WFF Air Quality Potential Impacts:

- The No Action Alternative would not change existing air quality conditions at the WFF.
- Alternative 3: Construction would introduce short-term increases in criteria pollutant emissions. However, these emissions would not change the region's attainment status.
- Alternative 3: Mobile source emissions generated by the 2.7 percent increase of population in Accomack County and Triton UAS operations would introduce increases in criteria pollutant emissions in Accomack County. However, these long-term effects would not change the regional attainment status.
- Alternative 3: About 740 metric tons of GHG emissions would be introduced from Triton UAS and commuters; however, this alone would not cause global warming that could lead to climate change.

8.3.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to air quality conditions. Therefore, regional air quality would remain consistent with existing conditions and no significant impacts are anticipated by implementing the No Action Alternative.

8.3.2.2 Alternative 3: Wallops Flight Facility, Virginia

Under Alternative 3, construction would include equipment, vehicles, and workers. For purposes of this analysis, a conservative estimate of emissions was undertaken for equal comparison of all action alternatives. Please refer to Section 3.3.3 for details of what and how emissions were identified. Anticipated air emissions from construction, demolition, and Triton UAS operations would represent a negligible percentage of the air emissions inventoried in Accomack County and within the AQCR (Table 8-5). Construction emissions associated with Alternative 3 would be short-term and temporary, and represent a small fraction of the emissions generated in Accomack County. Appendix C contains the emissions calculations used for this analysis. Emissions associated with construction and demolition activities would be temporary in nature, and appropriate fugitive dust-control measures (e.g., watering soils, replanting with vegetation) would be employed to minimize construction emissions to the greatest extent possible.

Table 8-5 Projected Air Emissions Generated by Alternative 3, Wallops Flight Facility

Emission Source	*Air Pollutant Emissions (Tons/Year)*[1]						
	VOCs	*CO*	*NO_x*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e (in metric tons)*
Construction Emissions (2018)[2]	0.52	2.40	6.51	0.09	38.16	4.13	539
Projected Operational Emissions (2019 onwards)[2]							
Triton Operations, Maintenance, and Ground Support Equipment	0.16	1.12	0.86	0.12	0.02	0.02	0.29
Commuting Emissions	0.22	13.33	1.26	0.01	0.09	0.08	739.33
Annual Total Projected Operational Emissions	***0.38***	***14.45***	***2.13***	***0.14***	***0.11***	***0.10***	***739.62***
Percent Contribution of Operational Emissions in Accomack County	*0.013%*	*0.353%*	*0.015%*	*0.011%*	*0.028%*	*0.004%*	*0.07%*

Notes: [1]Numbers may not add up due to rounding.
[2]Appendix C provides the calculation details for emissions.

Anticipated emissions associated with the additional personnel commuting to and from the WFF and Triton UAS flight operations (referred to as projected operational emissions), just presented in Table 8-5, would annually contribute less than 1 percent of regional emissions for any criteria pollutant. These increases would not cause or contribute to a violation of any NAAQS, increase the frequency or severity of a violation of any ambient air quality standard, or expose populations to substantially increased pollutant concentrations. JP-5 is a kerosene-based jet propellant that is not currently used at WFF Main Base; however, it is used on Wallops Island. Proper procedures for the storage and transfer of the fuel to reduce the potential for impact to air quality during fuel and defuel activities would be followed. Therefore, no significant impacts to local or regional air quality would be expected from implementing Alternative 3 at the WFF.

Climate Change

Depending on future GHG emissions and how the climate responds, average global temperatures are projected to increase worldwide by 0.5 to 8.6 degrees Fahrenheit by 2100, with a likely increase of at least 2.0 degrees Fahrenheit (USEPA, 2016b). In Virginia, the Georgetown Climate Center identified that sea levels along the state's coastline are rising faster today than in the past and that population centers near the coast face increasing flood risks and storm surges (Georgetown Climate Center, 2015). Additionally, hotter temperatures are likely to increase drought risks and level of salinity in water that affect water supplies, agricultural crops, and marine fisheries.

In August 2016, the CEQ issued its final *NEPA Guidance on Considerations of the Effects of Climate Change and Greenhouse Gas Emissions* (CEQ, 2016). This memorandum provides guidance on the ways in which federal agencies can improve their consideration of the effects of GHG emissions and climate change in the evaluation of proposals under NEPA. It further advises federal agencies to consider a quantitative and qualitative assessment of impacts if the direct CO_2e emissions from the proposed action may be reasonably anticipated to exceed 25,000 metric tons or more on an annual basis (CEQ, 2014). This level of emissions should not be considered a significance threshold under NEPA. Currently, there are no formally adopted or published NEPA thresholds of significance for GHG emissions because of the problematic nature of determining at what level proposed emissions would substantially contribute to climate change. The potential effects of the GHG emissions from the proposed action are by nature global and cumulative, as individual sources of GHG emissions are not large enough to have an

appreciable effect on climate change. Therefore, the appreciable impact on global climate change would occur when proposed GHG emissions combine with GHG emissions from other man-made activities and natural sources on a global scale (USEPA, 2016c). Therefore, GHG emissions are considered cumulatively with other global sources of GHG.

Implementation of Alternative 3 at WFF would contribute directly to emissions of GHGs from the combustion of fossil fuels. During demolition, construction, and clearing activities, 539 metric tons of CO_2e would be produced; once the home basing action is completed and all aircraft and personnel are at the station, about 740 metric tons of CO_2e emissions would be produced annually (see Table 8-5). Emissions of GHGs from Alternative 3 alone would not cause global warming that could lead to climate change. However, these emissions would increase the atmosphere's concentration of GHGs and could incrementally contribute to global warming.

Because of the importance of sustainability for DoD and NASA missions, both have implemented GHG emissions goals in response to the President's EO 13653, *Preparing the United States for the Impacts of Climate Change*. NASA has voluntarily established the goal of reducing GHG direct emissions from their owned/controlled facilities (scope 1) and indirect emissions from owned/controlled facilities (scope 2) by 18 percent by Fiscal Year (FY) 2020 from the FY 2008 baseline. NASA and DoD are planning to meet their GHG reduction targets by developing energy efficiency in facilities, identifying new strategies to minimize GHG emissions, and using innovative approaches and renewable energy (NASA, 2016b; DoD, 2015). Additionally, NASA plans to reduce its scope 3 emissions (indirect emissions from NASA activities that are from sources not owned or directly controlled by NASA) by 12.3 percent by FY 2020. The DoD plans to reduce its scope 3 emissions by 13.5 percent by FY 2020. The NASA *Strategic Sustainability Performance Plan* provides annual updates on reaching GHG reduction goals (NASA, 2015c). In 2014, NASA scope 1 and 2 GHG emissions reduced by 29 percent and scope 3 emissions reduced by 32 percent below the FY 2008 baseline (NASA, 2015c).

In addition to addressing the GHG emissions that come from Alternative 3, CEQ guidance recommends addressing the implications of climate change for the environmental effects of a proposed action, including the adaptation strategies the agency would develop in response to climate change. Climate change has important implications for NASA and Navy operations. Factors driving this include the potential impact of sea level rise on installations, operations, and plans; changing storm patterns and severity; and water and resource challenges (NASA, 2014c; U.S. Navy, 2012). For example, in response to climate change, the 2012 NASA Facilities Design Guide recommended several design and planning projects to achieve climate resiliency. These include, but are not limited to, raising critical infrastructure that sits in basements or on ground floors, increasing cleaning of drains and gutters, planting more heat and drought/flood tolerant vegetation, and installing or increasing the height of flood barriers such as revetments, levees, and sea walls. Climate change is a clear national security concern and forecasted to affect NASA and DoD more significantly in the future.

The DoD, U.S. Navy, and NASA are actively engaging in improving their resiliency to climate change: from conducting screening surveys to assess vulnerability of installations from severe weather and projected changes in climate, to developing tools to help installations assess how much water they need to satisfy mission requirements. In fact, NASA conducts research on climate science, enhancing the ability of the international scientific community to advance global integrated earth system science using space-based observations. The agency's research encompasses solar activity, sea level rise, the temperature of the atmosphere and the oceans, the state of the ozone layer, air pollution, and changes in sea ice and land ice (NASA, 2015c). As climate science advances, NASA, the DoD, and the U.S. Navy

will regularly evaluate climate change risks and opportunities in order to develop policies and plans to manage their effects on the operating environment, missions, and facilities.

8.4 Biological Resources

As identified in Section 3.4, this analysis focuses on three major biological resources categories: vegetation, wildlife, and special status species.

8.4.1 Affected Environment

The affected environment for biological resources includes the area proposed for construction adjacent to Runways 4/22 and 10/28 (see Figure 8-2).

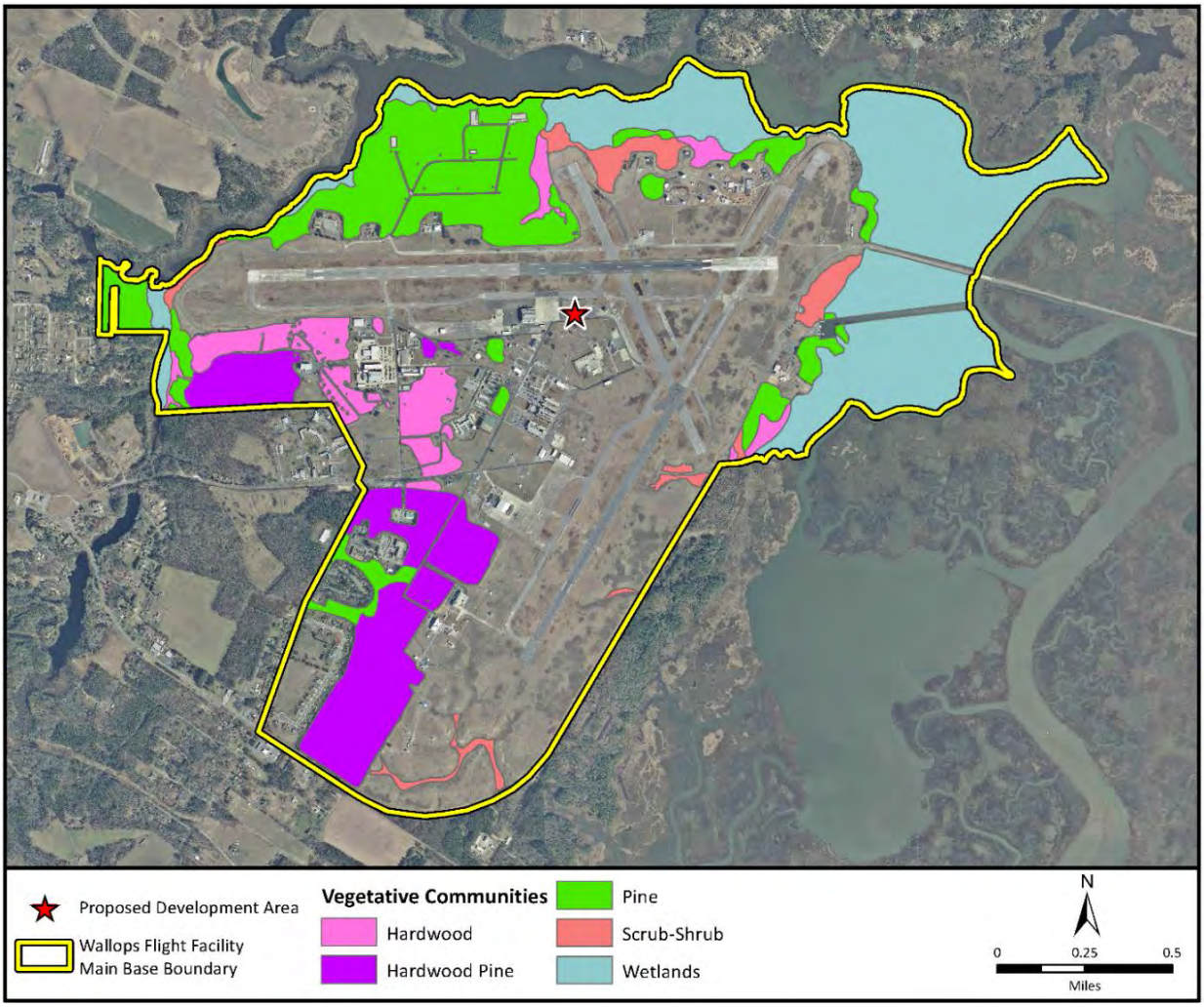
8.4.1.1 Vegetation

The WFF Main Base is dominated by vegetation classified as managed, maintained, or planted (Table 8-6 and Figure 8-2). The majority of these areas are maintained as open grassland necessary for the mission; however, some areas are landscaped. In addition, there are approximately 255 acres of impervious surfaces consisting of roads, parking lots, airfield runways, buildings, and unpaved parking areas and roads with no vegetation. Forested areas cover 22 percent of the Main Base and vary in composition based on historical land use and site conditions, but three main classifications prevail: hardwood, pine, and mixed pine-hardwood. The remaining area comprises wetlands that include emergent and scrub-shrub areas.

Table 8-6 Vegetation Communities at Wallops Flight Facility Main Base

Community	*Main Base (acres)*
Managed, Maintained, or Planted	850
Forests	432
Wetlands (emergent estuarine and scrub shrub)	387
Impervious surfaces and unpaved roads/parking*	255
Total	**1,924**

Note: *This item included to represent total acreage for the Main Base.



Note: Areas that do not have vegetation communities indicated are managed landscapes or already developed/improved.

Figure 8-2 Vegetation Communities on Wallops Flight Facility Main Base

Managed/maintained vegetation at the WFF occurs in areas that are either mission critical (i.e., runway clear zones) or are landscaped for aesthetic or stormwater management purposes. Common species that occur in areas maintained by mowing are crabgrass (*Digitaria sanguinalis*), Bermuda grass (*Cynodon dactylon*), meadow fescue (*Schedonorus pratensis*), bluegrasses (*Poa* spp.), sheep sorrel (*Rumex acetosella*), chickweeds (*Cerastium* spp.), and other non-native weedy species. A variety of landscape and ornamental trees and shrubs are planted in areas that are maintained for aesthetic purposes. Commonly used native species are loblolly pine (*Pinus taeda*) and American holly (*Ilex opaca*). Non-native species used for landscaping include Bradford pear (*Pyrus calleryanal*), autumn olive (*Elaeagnus umbellata*), thorny olive (*Elaeagnus pungens*), ornamental cherry (*Prunus* spp.), and privet (*Ligustrum* spp.). There are three areas of wetlands on the WFF that function as part of the stormwater management system around the airfield. These semi-natural communities are classified as managed/maintained vegetation because they are within the runway clear zones; therefore, the vegetation height is maintained by mowing or brush cutting (NASA, 2016a).

8.4.1.2 Wildlife

Wildlife includes animal species (i.e., amphibians, reptiles, birds, and mammals) focusing on the species and habitat features of greatest importance or interest. Invertebrates are found in all habitat types at WFF; however, invertebrate diversity is highest in marsh and wetlands areas. Amphibians and reptiles found at WFF include Fowler's toad (*Anaxyrus fowleri*), green treefrog (*Hyla cinerea*), eastern ratsnake (*Pantherophis alleghaniensis*), eastern hognose snake (*Heterodon platirhinos*), fence lizard (*Sceloporus undulates*), eastern box turtle (*Terrapene carolina*), and northern diamond-backed terrapin (*Malaclemys terrapin*) (NASA, 2008b). Birds that commonly use open and urban areas at WFF include northern mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), northern cardinal (*Cardinalis cardinalis*), northern bobwhite (*Colinus virginianus*), barn swallow (*Hirundo rustica*), brown-headed cowbird (*Molothrus ater*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), rock dove (*Columba livia*), and European starling (*Sturus vulgaris*) (NASA, 2008b). The only large mammal that occurs at WFF is the white-tailed deer (*Odocoileus virginianus*). Other mammals found on WFF property include the red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), eastern grey squirrel (*Sciurus carolinesis*), white-footed mouse (*Peromyscus leucopus*), meadow vole (*Microtus pennsylvanicus*), river otter (*Lontra canadensis*), and eastern cottontail (*Sylvilagus floridanus*) (NASA, 2008b).

8.4.1.3 Special Status Species

Special status species are defined as: (1) federally listed plant and animal species and their habitats that are protected under the Endangered Species Act; and (2) other special status species include bald and golden eagles and migratory birds.

Endangered Species Act

The northern long-eared bat is the only federally listed species that may occur on or near the WFF airfield. While the WFF is not required to comply with Virginia's equivalent of the Endangered Species Act as a federal agency, it does voluntarily comply with Virginia's regulations regarding state-listed species (Table 8-7). As such, it consults with the Virginia Department of Game and Inland Fisheries and Virginia Department of Conservation and Recreation (VDCR) to ensure protection and monitoring of state-listed species at WFF. The following discussion addresses only those species potentially occurring in the project area of WFF.

Table 8-7 Endangered Species Act Listed Species Potentially Occurring in the Vicinity of Alternative 3, Wallops Flight Facility

Common Name	*Scientific Name*	*Federal Status*	*State Status*	*Notes*
BIRDS				
Bald eagle	*Haliaeetus leucocephalus*	Bald and Golden Eagle Protection Act	Threatened	Active nests on Wallops Main Base and Island.
Upland sandpiper	*Bartramia longicauda*	---	Threatened	Rare in Virginia; breed in Northern Virginia counties with possible post-breeding presence in the area.
Loggerhead shrike	*Lanius ludovicianus*	---	Threatened	Historic occurrence in Accomack County; however, recent Virginia occurrences have only been in the Shenandoah Valley.
Henslow's sparrow	*Ammodramus henslowii*	---	Threatened	Small breeding populations may occur in Accomack County.
Migrant loggerhead shrike	*Lanius ludovicianus migrans*	---	Threatened	Precise distribution of this subspecies of shrike in Virginia is unclear.
MAMMALS				
Northern long-eared bat	*Myotis septentrionalis*	Threatened	---	Potentially in the area in summer months for roosting and feeding.

Source: NASA, 2016a.

Listed species. The northern long-eared bat (*Myotis septentrionalis*) is on the federal threatened list; however, this species is currently proposed for the federal endangered list. This bat is medium-sized, measuring roughly 3 to 3.7 inches in length and weighing approximately 0.2 to 0.3 ounces. Its fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. The northern long-eared bat is distinguished by its long ears, particularly as compared to other bats in its genus. The northern long-eared bat spends winter hibernating in caves and abandoned mines. During the summer, they tend to roost singly or in colonies underneath loose tree bark and in the cavities or crevices of both live and dead trees. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. Threats to this species include disturbance during hibernation, loss of summer habitat, pesticides and other contaminants, and most recently the disease known as white-nose syndrome. The disease is named for the white fungus that infects skin of the muzzle, ears, and wings of hibernating bats. Under the Final 4(d) Rule, the USFWS only prohibits the incidental take of northern long-eared bats outside of hibernacula that results from tree clearing activities.

Other Special Status Species

Bald eagle (*Haliaeetus leucocephalus)*. Removed from the federal threatened and endangered species list in 2007, the bald eagle still has federal protection under the Bald and Golden Eagle Protection Act and the MBTA. Bald eagles are primarily associated with open water areas fringed with riparian habitat, and are typically found along the coasts, rivers, and lakes where nesting occurs in tall, living trees. Figure 8-3 provides the approximate location of bald eagle nesting sites near the airfield (NASA, 2016a). NASA currently maintains a 660-foot construction buffer around bald eagle nest sites per an agreement with the U.S. Fish and Wildlife Service.

Migratory Birds. The WFF is home to a wide variety of bird species. A large number of migratory birds have been documented at WFF due to its location within the Atlantic Flyway, which is a major migration route for birds along the Atlantic coast (NASA, 2008b).

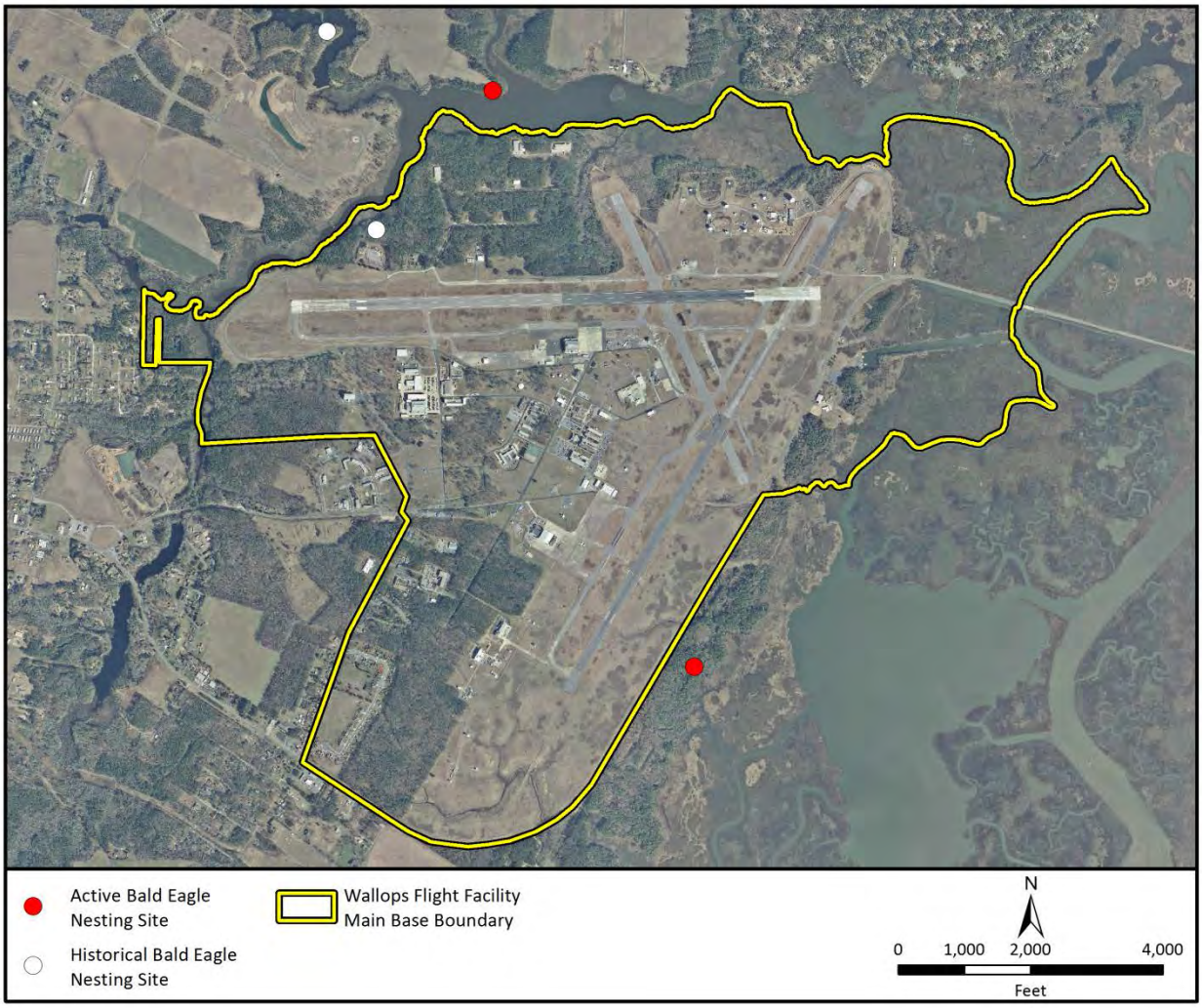


Figure 8-3 Bald Eagle Nest Sites at Wallops Flight Facility Main Base

Climate Change

Coastal cities and towns of the Mid-Atlantic face challenges associated with climate change, such as sea level rise, the possibility of increasingly severe storms, and shifts in the abundance and distribution of fish and other marine species (Mid-Atlantic Regional Council on the Ocean [MARCO], 2015). Superstorm Sandy highlighted the enormous challenges that climate change presents to coastal communities and natural resources in the Mid-Atlantic region. Flooding from the storm damaged many areas of residential, commercial development, airports, and subway lines. The Mid-Atlantic region also contains large river estuaries and extensive narrow strips of elongated barrier beaches, typically separated from the mainland by bays and marshes. These coastal ecosystems contain interrelated coastal habitats that support many priority fish, wildlife, and plant species. Increases in the number and severity of storms and sea level rise will have direct changes to distribution patterns of these species; however, specific changes have not yet been documented at WFF (MARCO, 2015).

8.4.2 Environmental Consequences

This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law or statute.

WFF Potential Biological Resource Impacts:

- The No Action Alternative would not change any existing conditions for biological resources on WFF.
- Alternative 3: Approximately 5 acres of maintained vegetation would be removed.
- Alternative 3: Construction noise may result in minor behavioral disturbance. However, effects to feeding, sheltering, and reproduction are not anticipated, and temporary alterations to behavior would return to normal once construction is complete.
- Alternative 3: Once operational, Triton UAS operations would introduce 3.1 percent more operations, producing a less than 1-dB DNL increase in the noise levels. This amount of change would negligibly impact wildlife.
- Alternative 3: Pursuant to the ESA, federally listed species would not be affected by this alternative. Pursuant to the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, no harm or incidental take of eagles or migratory birds is anticipated.

8.4.2.1 No Action Alternative

Under the No Action Alternative, this alternative would not be implemented and there would be no change to biological resources. Therefore, existing conditions for biological resources would remain unchanged if the No Action Alternative were implemented.

8.4.2.2 Alternative 3: Wallops Flight Facility, Virginia

The affected environment for the analysis of effects to biological resources associated with Alternative 3 includes the approximate 10 acres disturbed by facility and infrastructure construction. Once the home basing is complete and all UAS aircraft arrive, operational activities would not have significant impacts to biological resources.

Vegetation

The proposed construction activities to support the Triton UAS would be located on the Main Base airfield in a managed/maintained area. Approximately 5 acres of maintained vegetation would be impacted. The amount of maintained vegetation lost would not constitute a significant impact under Alternative 3. Once home based, Triton UAS flight operations would not affect vegetation and nor would increases in personnel and their dependents, so both the Triton UAS operations and increase in personnel are not carried further for detailed analysis.

Wildlife

Noise created during construction and demolition activities and Triton UAS flight operations could result in short-term, indirect impacts on wildlife. However, construction noise would be less than the noise associated with existing aircraft operations at the airfield. Predictors of wildlife response to noise include noise type (e.g., continuous or intermittent), prior experience with noise, proximity to a noise source, stage in the breeding cycle, activity, age, and sex composition. It is anticipated that wildlife residing near the project areas could be disturbed temporarily because of the noise from construction, demolition, and renovation activities. Given the current level of air traffic at the station, wildlife using nearby habitat would have become habituated to noise and temporarily relocate to adjacent, less-utilized habitat, and return to the area later (Ellis et al., 1991; Grubb and King, 1991). A less than 1 dB DNL increase would not be expected to produce a noticeable change in average noise levels within the areas currently exposed to noise from aircraft operations. The increase in noise levels from Triton UAS flight operations would not affect wildlife using nearby habitat, as the wildlife would have become

habituated to aircraft noise. No significant impacts to wildlife would be expected under Alternative 3, WFF.

Special Status Species

Endangered Species Act. The only special status species on the WFF Main Base is the northern long-eared bat. No tree clearing would occur in the area proposed for construction; therefore, the Navy and NASA have determined that, under the ESA, no effects would occur to the northern long-eared bat. During the summer months, the species may inhabit the forested areas around the perimeter of WFF and temporary impacts could occur from noise generated during construction or from UAS flight operations. However, these species are already habituated to existing noise levels associated with ongoing aircraft activities. Construction related increases in noise levels from those in the ambient noise environment would be negligible and temporary. Alternative 3 would not result in a take under the ESA of northern long-eared bats or result in any significant impact on the species. Because there would be no takes or direct or indirect impacts to northern long-eared bats, no adverse impacts are anticipated. Pursuant to the ESA, the action and environmental consequences at Alternative 3, WFF, would have no effect on federally listed species. Proposed and ongoing launch operation activities at WFF (including but not limited to UAS flights and routine facility maintenance) are conducted in accordance with the terms of USFWS Biological Opinion dated June 22, 2016.

Other Special Status Species

Bald Eagles. No suitable habitat for the bald eagle exists in the area proposed for construction. While there are two active bald eagle nests located off the installation near the installation boundary, there are no active eagle nests within 660 feet of the area designated for airfield construction. Noise from flight operations would not be anticipated to adversely impact the bald eagle as the species is likely habituated to noise associated with aircraft operating from the airfield. Implementing Alternative 3 would not result in a take of bald eagles or result in any significant impact on the species. Pursuant to the Bald and Golden Eagle Protection Act, no harm or take of bald eagles is anticipated.

Migratory Bird Treaty Act. Military-readiness activities associated with Alternative 3, WFF, would include Triton UAS flight operations. Non-military readiness activities include construction of the facilities and once home based, administration and maintenance operations. Potential adverse impacts to migratory birds from construction and demolition activities associated with Alternative 3 could be mitigated by conducting a site survey of the proposed construction and demolition areas prior to commencement of construction activities to ensure the absence of migratory birds or by conducting construction activities outside of the migratory bird-nesting season (typically during the summer). Additionally, the USDA Wildlife Services holds a federal migratory bird depredation permit that authorizes the dispersal and removal of birds from the airfield. The use of these measures, or other mitigation measures, as determined necessary by the WFF Environmental Manager would ensure that no violation of the MBTA or EO 13186 would occur from implementing Alternative 3. Therefore, pursuant to the MBTA, no harm or take of migratory birds is anticipated.

Climate Change

According to the USEPA, temperatures in the southeast are estimated to increase by 4 to 8 degrees Fahrenheit by 2100 (USEPA, 2016c). Climate change effects to Chincoteague National Wildlife Refuge were evaluated by the USFWS. They applied a high-tech tool to predict the effect of rising sea levels—the Sea Level Affecting Marshes Model (SLAMM) (USFWS, 2011). The model helps forecast habitat transformations as sea levels rise. The model analyses a variety of scenarios on individual refuges,

including GHG emissions, land subsidence, buildup of sediments, and other variables that affect relative sea levels and habitat types. SLAMM allows users to view different predictions to determine how, for example, a coastal forest may evolve over time into a salt marsh. In 2009, the SLAMM results for Chincoteague predicted nearly a complete transformation of the refuge. Vast swaths of wetlands, and shorebird habitats they contain, would likely be radically altered, or even under water, by 2100 (USFWS, 2011).

NASA has predicted that wetland losses due to increased storm surge impacts may affect the buffering effect that protects some of their coastal facilities. Increasing downpours and fluctuating groundwater tables may also mobilize contaminants at remediation sites (NASA, 2015c). While Alternative 3 would not be directly impacted by climate change in the next decade or so, changes in distribution patterns of wildlife and special status species may be encountered. However, Alternative 3 does not have environmental effects, such as reducing water resources, habitat alterations, or species distribution changes that could be exacerbated by climate change in the foreseeable future. Because monitoring climate change is a dynamic process, the Navy and NASA will continue to analyze any potential climate change effects in the project area and also any adaptation measures that may be necessary.

8.5 Water Resources

As identified and defined in Section 3.5, this discussion of water resources includes groundwater, surface water, wetlands, and floodplains.

8.5.1 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under water quality resources at the WFF. The affected environment encompasses the area proposed for construction within the developed areas between Runways 10/28 and 17/35. Neither floodplains nor wetlands would be affected by Alternative 3 so no further examination of these facets of water resources is presented. Compliance with the Coastal Zone Management Act is addressed in Section 10.1, Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations.

8.5.1.1 Groundwater

WFF receives all of its potable water from groundwater supply wells located within the boundaries of the installation. Groundwater is from the Columbia and Yorktown-Eastover multi-aquifer system (NASA, 2016a). Virginia DEQ manages groundwater withdrawals in designated Groundwater Management Areas under the Groundwater Management Act of 1992. The WFF lies within the Eastern Shore Groundwater Management Area, which includes Accomack and Northampton counties. WFF voluntarily complies with historic groundwater withdrawal permits issued by the Virginia DEQ. Main Base withdrawals averaged 1,614,488 gallons per month over a 5-year period from 2011 to 2015 (NASA, 2016a).

8.5.1.2 Surface Water

WFF is located in the Eastern Lower Delmarva and Chincoteague watersheds. The entire airfield at WFF is part of the Chincoteague watershed drainage. This portion of the WFF drains primarily into Little Mosquito Creek to the west and north, and borders Simoneaston Bay tidal marsh to the east. The southeastern portion of the Main Base includes stormwater swales and ditches that drain to Watts Bay. In 2006, the surface waters of Little Mosquito Creek were listed on Virginia 303(d) list as an impaired water body for beneficial uses including aquatic life due to low dissolved oxygen and is still identified as impaired (Virginia DEQ, 2014).

Permit No. VA0024457, under the Virginia Pollutant Discharge and Elimination System (VPDES) program was issued to WFF by the Virginia DEQ on August 17, 1989, with the most recent renewal date being September 2, 2014. The VPDES permit applies to 11 industrial stormwater outfalls on the Main Base, including the Federally Owned Treatment Works process outfall. Four non-industrial stormwater outfalls are located on the Main Base.

The Virginia Stormwater Management Program (VSMP) regulations (4 Virginia Administrative Code 3-20), administered by the VDCR, require that construction and land development activities incorporate measures to protect aquatic resources from the effects of increased volume, frequency, and peak rate of stormwater runoff and from increased non-point source pollution carried by stormwater runoff. The VSMP also requires that land-disturbing activities of 1 acre or greater develop a Storm Water Pollution Prevention Plan (SWPPP) and acquire a permit from the VDCR prior to construction.

WFF has both natural and man-made drainage patterns and stormwater drains to intercept and divert stormwater flow. On the northern portion of the WFF Main Base, stormwater flows drain to Little Mosquito Creek and eventually to the Atlantic Ocean. On the eastern and southeastern portions of the WFF Main Base, the natural drainage pattern flows to Jenneys Gut and Simoneaston Bay, then into Cockle Creek, Shelly Bay, and Chincoteague Bay before reaching the Atlantic Ocean. On the western and southwestern portions of the WFF Main Base, the natural drainage pattern is toward Wattsville Branch, then to Little Mosquito Creek, and on to the Atlantic Ocean. Stormwater drains on the WFF Main Base intercept natural drainage ditches and divert the flow to numerous discharge locations. The extensive storm drainage network on the WFF Main Base discharges into Little Mosquito Creek to the north and west, and into Simoneaston Bay tidal marsh to the east (NASA, 2016a). There are no surface water bodies located within the proposed construction site.

8.5.2 Environmental Consequences

Factors considered in the analysis of potential impacts to water resources include: (1) violation of federal and/or state water quality standards, (2) substantial depletion of groundwater supplies or interference with groundwater recharge, and (3) alteration of existing drainage patterns.

WFF Potential Water Resources Impacts:

- Under the No Action Alternative, no significant impacts to water resources would occur.
- Alternative 3: Groundwater would not be affected by construction or operations.
- Alternative 3: During construction, erosion and sedimentation measures would ensure no significant impacts would be introduced.
- Alternative 3: Once operational, no significant impact would occur to water resources due to Triton UAS activities.
- Alternative 3: No wetlands or floodplains would be impacted.

8.5.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline water resources. Therefore, no significant impacts to water resources would occur with implementation of the No Action Alternative.

8.5.2.2 Alternative 3: Wallops Flight Facility, Virginia

The study area encompasses the proposed construction and ground disturbance areas related to Alternative 3.

Groundwater

Alternative 3 would not result in significant vegetation removal; soil compaction, as soils in the proposed development area have been previously disturbed; or

alter the natural drainage flow, as pre-construction hydrologic connectivity would be maintained through the use of culverts and other measures, as deemed appropriate.

None of the construction, demolition, or renovation activities associated with Alternative 3 would extend below ground surface to a depth that would affect the underlying aquifer. Although fuel or other chemicals could be spilled during construction, demolition, and renovation activities, implementation of the required Spill Prevention, Control, and Countermeasures (SPCC) Plan and immediate cleanup of any spills would prevent infiltration into groundwater resources.

Under Alternative 3, over 900 individuals would be added to the area population and maintenance activities for the Triton UAS would occur. These activities would introduce increases in the use of potable water from the Columbia and Yorktown-Eastover multi-aquifer system. However, there is existing capacity of the aquifer system to meet these increased demands. Stormwater best management practices, such as silt fencing, would be in place to appropriately direct surface waters to recharge areas. Therefore, negligible impacts are anticipated to groundwater supplies.

Surface Water

Approximately 5 acres of impervious surfaces would be added to WFF. Localized increases in stormwater runoff could potentially occur; however, any possible increases would not exceed the current capacities of stormwater systems at WFF. Retention structures would be constructed to collect stormwater from the newly developed area. These stormwater retention structures would be designed, through size and depth of the retaining areas and the manner in which it drains to the system, to discharge no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Construction practices to reduce soil erosion and in runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. Stormwater best management practices and standard operating procedures are detailed in WFF's SWPPP. Additionally, a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development," would be used to minimize stormwater effects. These practices could include reducing impervious surfaces, using porous pavements, and installing cisterns.

During construction and demolition activities, runoff from site improvements could result in a slight increase in turbidity. Potential impacts from an increase in turbidity would be minimized with implementation of best management practices (e.g., wetting of soils, silt fencing, and detention basins) and adherence to erosion and stormwater management practices, as determined by the Navy, to contain soil and runoff on the project areas. Construction and demolition activities associated with Alternative 3, therefore, are not anticipated to degrade the water quality or affect beneficial uses of surface water resources.

The Navy and NASA would be required to obtain permit coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities ("Construction General Permit") from the Virginia DEQ for the proposed construction activities prior to any ground disturbance activities. The Navy and NASA would select, install, and maintain effective erosion- and sediment-control measures as identified and as necessary to comply with the Construction General Permit (USEPA, 2012). In addition, under the Construction General Permit, the Navy and NASA would develop a SWPPP for the proposed construction activities prior to implementing Alternative 3. The SWPPP would describe and ensure implementation of practices that would reduce pollutants in

stormwater discharges into the Atlantic Ocean and prevent violations of applicable regulations and standards.

Construction and demolition equipment (e.g., bulldozers, backhoes, dump trucks, and cranes) would be stored at the construction site. Fuels, hydraulic fluids, oils, and lubricants also would be stored to support contractor vehicles and machinery. No other hazardous materials are anticipated to be stored or used at the construction site. Construction contractors would follow appropriate actions to protect against potential petroleum or hazardous material spills. Proper housekeeping, maintenance of equipment, and containment of fuels and other potentially hazardous materials would be conducted to minimize the potential for a release of fluids into groundwater or surface waters. If a spill or leak were to occur, procedures identified in the SWPPP and SPCC Plan would be implemented to contain the spill and minimize the potential for, and extent of, associated contamination. Therefore, no significant impacts on water quality, groundwater, or surface water bodies would be expected from implementing Alternative 3.

Triton UAS operations are unlikely to have significant impacts to water resources. WFF would continue to operate within all permitted guidelines, follow all spill prevention plans, and adhere to the SWPPP. There would be insignificant impacts to surface waters through implementation of Alternative 3.

Climate Change

According to the USEPA, changes to water sources due to increasing temperatures include shrinking water supplies due to hotter weather, increased evaporation, as well as increased demand from humans, animals, and agricultural products (USEPA, 2016d). The WFF is located along Virginia's Eastern Shore in an intracoastal area, which is quite vulnerable to sea level rise. This rise can intensify coastal flood and storm events, increase inundations of the fresh- and shallow-water habitats, and introduce salt-water intrusion into groundwater (Bilkovic et al., 2009). Additionally, stormwater and wastewater systems also face risks from rising sea levels and the damaging impacts of storm surges (USEPA, 2016d). Floodplains may also expand and thus expose more infrastructure to increased episodes of inundation.

8.6 Socioeconomics

This section discusses population demographics, employment and income, and housing occupancy status data provide key insights into socioeconomic conditions that might be affected by a proposed action. See Section 3.7 for the resource definition and the approach to analysis.

8.6.1 Affected Environment

The study area for socioeconomic resources includes the three-county area of Accomack and Northampton in Virginia, and Somerset County in Maryland. Data presented have been collected from a variety of sources including the U.S. Census Bureau 2000 and 2010, Virginia Employment Commission, Maryland Department of Planning, U.S. Department of Commerce, and WFF.

8.6.1.1 Population

Table 8-8 provides the 2014 population of the three counties in the affected region with a comparison to the Commonwealth of Virginia (VA) and the State of Maryland (MD). The 2014 population of the three counties combined was 71,001. Accomack and Northampton counties declined in population between 2000 and 2014 by 13.8 percent and 7.4 percent, respectively. Somerset County grew by 4.5 percent. Over the same period, Virginia grew by 17.6 percent and Maryland by 12.8 percent (U.S. Census Bureau, 2016). Projections indicate that all three counties will experience population growth from 2014 to 2020.

Table 8-8 Study Area Population and Population Trends

Jurisdiction	*2000*	*2010*	*2014*	*Growth Rate 2000-2014 (Percent)*	*2020 Projection*	*Growth Rate 2014-2020 (Percent)*
Accomack County, VA	38,305	33,164	33,021	-13.8	33,432	1.2
Northampton County, VA	13,093	12,389	12,121	-7.4	12,133	0.1
Somerset County, MD	24,747	26,470	25,859	4.5	27,275	5.5
Total	**76,145**	**72,023**	**71,001**	**-16.7**	**72,840**	**6.8**
Virginia	7,078,515	8,001,024	8,326,289	17.6	8,871,484	6.5
Maryland	5,296,486	5,773,552	5,976,407	12.8	6,224,150	4.1

Sources: U.S. Census Bureau, 2016; Weldon Cooper Center, 2016; Maryland Department of Planning, 2016.

8.6.1.2 Employment and Income

Total employment in the study area was approximately 96,278 jobs in 2015 (Table 8-9). The industries that employed the most people in the three counties are government (28 percent); manufacturing (16 percent); trade, transportation, and utilities (14 percent); and educational and health services (14 percent). NASA is the fifth largest employer in Accomack County following Perdue Products, Tyson Farms, Accomack County School Board, and County of Accomack, respectively (Virginia Employment Commission, 2016). In 2014, the unemployment rates were 6.0 percent in Accomack County, 6.7 percent in Northampton County, and 9.1 percent in Somerset County (Bureau of Labor Statistics, 2016a; 2016b).

Table 8-9 Baseline Percent Employed by Industry in the Study Area, 2014

Industry	*Accomack*	*Northampton*	*Somerset*	*Total*
Agriculture, Fishing, and Mining	1	16	3	5
Construction	3	2	4	3
Manufacturing	25	12	3	16
Trade, Transportation, and Utilities	14	11	16	14
Information	1	0	0	0
Financial Activities	1	1	3	2
Professional and Business Services	10	2	3	7
Educational and Health Services	9	21	16	14
Leisure and Hospitality	11	14	5	10
Other Services	2	2	2	2
Government	22	19	45	28
Total[1]	**100**	**100**	**100**	**100**

Note: [1]Numbers may not add up due to rounding.
Sources: Virginia Employment Commission, 2016; Maryland Department of Labor, Licensing and Regulation, 2016.

In FY 2015, WFF employed 1,119 NASA employees comprising 844 contractors and 275 civil servants (NASA, 2016a). The majority of WFF employees (civil servants and contractors) are residents of Accomack County. Employment categories at WFF consist largely of managerial, professional, and technical disciplines with higher than regional average salaries.

Total per capita income in the study area increased by an average of 6.3 percent from 2010 to 2015 (Table 8-10). Per capita income in Virginia and Maryland grew by 13.7 percent and 10.5 percent, respectively over the same period. All three counties had per capita incomes lower than their respective states (U.S. Department of Commerce, 2016).

Table 8-10 Per Capita Income in the Study Area

Jurisdiction	*2010 Per Capita Income[a]*	*2015 Per Capita Income[a]*	*Percentage Increase 2010-2015*
Accomack County, VA	33,403	36,960	10.6
Northampton County, VA	35,498	35,987	1.4
Somerset County, MD	27,472	29,389	7.0
Virginia	44,267	50,345	13.7
Maryland	49,023	54,176	10.5

Note: [a] Not adjusted for inflation.
Source: U.S. Department of Commerce, 2016.

The median household income in 2014 for Accomack County was $39,389; in Northampton County it was $34,656; and in Somerset County it was $36,716. An average of 22 percent across the three counties lived in households with incomes below the poverty line (U.S. Census American Factfinder, 2016).

8.6.1.3 Housing

In 2014, there were approximately 39,540 housing units across the study area (Table 8-11) and the average vacancy rate across the counties was 28 percent (U.S. Census Bureau, 2016). Across the three counties, approximately 68 percent of housing units were owner-occupied homes, with 32 percent rental units. The comparable vacancy rate for Virginia was 10.6 percent, and for Maryland, 10.1 percent (U.S. Census Bureau, 2016). The Eastern Shore is a popular vacation destination and the high vacancy rate generally reflects the high number of second or vacation homes in the area.

Table 8-11 Housing Units and Vacancy, 2014

Jurisdiction	*Housing Units*	*Percent Vacant*	*Occupied Housing Units*		
			Total	*Percent Owner*	*Percent Renter*
Accomack County, VA	21,054	32	14,289	70	30
Northampton County, VA	7,322	29	5,237	70	30
Somerset County, MD	11,164	24	8,498	65	35

Source: U.S. Census Bureau, 2016.

The U.S. Navy Housing Center is located adjacent to the WFF Main Base and includes residences for both bachelors and families. The Unaccompanied Housing in Building R-010 contains six efficiency 1-bedroom units. Family housing in the Skeeter Lane area includes 20 homes comprising 2-bedroom (14), 3-bedroom (2), and 4-bedroom (4) homes. Navy Gateway Inns and Suites has 63 total rooms composed of 29 private rooms, 14 shared baths, 18 standard suites, and 2 family suites. Each private room, shared bath sleeps up to two guests and suites can sleep up to four guests. In addition, temporary dormitories in Buildings F-004 and F-005 on the Main Base are available for visiting personnel (NASA, 2016a).

8.6.2 Environmental Consequences

Analysis of impacts to socioeconomics is focused on the effects of the alternative on population, employment and income, and housing in the three-county study area of Accomack and Northampton Counties in Virginia and Somerset County in Maryland. These counties comprise the area where the majority of Triton UAS personnel would likely live.

WFF Potential Socioeconomic Impacts:

- The No Action Alternative would not change socioeconomic conditions within the WFF study area.
- Alternative 3: The minor increase in the population would not introduce adverse impacts.
- Alternative 3: There would be short-term beneficial economic effects during construction and long-term beneficial impacts from additional employment incomes.
- Alternative 3: Housing units (owner occupied and rental) are available for increases in personnel and their dependents in the WFF study area.

8.6.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the socioeconomic conditions of the study area. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

8.6.2.2 Alternative 3: Wallops Flight Facility, Virginia

The potential impacts of Alternative 3 at WFF were analyzed by considering any changes to socioeconomic conditions. This analysis examines how the Alternative 3 would affect population (i.e., demographics), employment and income, and housing.

Population

Construction and demolition contractors would be drawn from the study area's labor pool. For construction projects of this duration and magnitude, the workforce is generally composed of workers that would commute to job sites rather than relocate their households. As such, the construction and demolition activities are not anticipated to result in either an in-migration or relocation of employees to satisfy the need for temporary construction-related employment. Therefore, no increase in population would be expected from temporary construction workers relocating to the study area.

Up to 400 additional personnel would be stationed at WFF on a long-term basis. Using 2014 demographic information, it is estimated that 52 percent of the 400 personnel would be accompanied by a spouse/partner, for 607 total adults (DoD, 2014b). Accompanying these adults would be 307 dependents, of which 184 children would be school age (i.e., ages 5 to 18), for a total population increase of 914 individuals in the three-county study area. Some dispersion is likely, but should all 914 individuals reside in one of the three study area counties, this would represent a population increase of 2.7 percent in Accomack County, a 7.5-percent increase in Northampton County, and a 3.5-percent increase in Somerset County. This long-term population increase would not significantly change demographics of the three-county study area under Alternative 3; therefore, impacts would be negligible.

Employment and Income

During construction, demolition, and renovation activities, short-term employment and income provided by civilian contracting firms for up to 2 years would result in beneficial impacts in the local

economy due to an increase in demand for goods and services. It is not anticipated that, given the market for similar goods and services, this increase in demand would result in a scarcity of such goods and services in the study area.

Once the home basing is complete, it was estimated there would be 914 family members, of whom 207 adults were assumed to be joining the local labor market. Labor would likely be distributed, but should all labor be performed in one county, this would represent an increase of 1.6 percent in Accomack County, a 4.2-percent increase in Northampton County, and a 3.0-percent increase in Somerset County. These additional workers would contribute to the regional workforce and directly stimulating the local economy. However, employment may be difficult to find given the higher unemployment rates in these counties—6.0 percent in Accomack County, 6.7 percent in Northampton County, and 9.1 percent in Somerset County. In general, there would be a beneficial effect on the local economy due to an uptake in the local labor pool and an increase in demand for goods and services.

Housing

The Navy provides on-installation housing for eligible military personnel in either bachelor (i.e., officer or enlisted) quarters or family housing. However, housing is very limited on WFF Main Base; therefore, it is assumed that all of the 400 personnel (and their dependents) would seek housing in the three-county area. Personnel living off a military installation are granted a basic allowance for housing (BAH), which can be used to rent or purchase a home. With an average housing unit vacancy rate of approximately 28 percent across the three counties, there is adequate, affordable rental housing available for personnel to reside off the WFF. It is not anticipated that the additional demand for housing would lead to noticeable increases in housing costs. No significant impacts to housing are anticipated from implementing Alternative 3 at WFF.

In summary, implementing Alternative 3 would not result in significant impacts to the socioeconomic conditions of the study area.

8.7 Transportation

Transportation resources that are addressed in this section focus on vehicle movements throughout a road and highway network. Roadways are classified into one of three types according to the function each serves in moving traffic: arterial roads, collector roads, and residential streets.

8.7.1 Affected Environment

Virginia's Eastern Shore is connected to the mainland by U.S. Route 13 and the Chesapeake Bay Bridge Tunnel, a 20-mile long, four-lane bridge/tunnel crossing between Virginia Beach and Northampton County. Traffic in the region varies with the seasons: during the winter and early spring traffic is minimal, during the summer and early fall traffic surges due to increased tourism in the area. The primary north/south route that spans the Delmarva Peninsula is U.S. Route 13, a four-lane divided highway and operates at a good Level of Service (LOS C or better) (Virginia Department of

Transportation, 2006). An LOS of C indicates that there is a stable flow of traffic but the ability to maneuver through lanes is restricted and lane changes require more driver awareness.

Local traffic travels by arteries branching off U.S. Route 13. Primary access to WFF is provided by Route 175, a two-lane secondary road, to either Mill Dam Road or Atlantic Road (Figure 8-4); these roads meet outside the entrance to the WFF Main Base gate. The WFF Main Base gate is the single point of entry onto the Main Base.

In 2007, a traffic study was conducted in support of proposed development of the Wallops Research Park near the Main Base gate (NASA, 2007). The 2007 conditions of Route 13 to Route 175, during the morning (7:15-8:15 a.m.) and evening (4:00-5:00 p.m.) peak hours, Monday through Friday, had an average LOS of B. Route 175 to Mill Dam Road during the peak hours had an average LOS of A. Route 175 to Atlantic Road during the peak hours had an average LOS of C (NASA, 2007).

Figure 8-4 Wallops Flight Facility Local Road Network

8.7.2 Environmental Consequences

The LOS is a factor that is considered when evaluating impacts for vehicle transportation. Another factor is contribution of GHGs from the action. The former factor is evaluated here for Route 175, Mill Dam Road, and Atlantic Road. The latter factor, GHG emissions, was evaluated in section 8.3.2.2.

8.7.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to roadway LOS. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

8.7.2.2 Alternative 3: Wallops Flight Facility, Virginia

Construction and demolition activities on WFF Main Base could result in temporary impacts to traffic flow from construction-related traffic on Route 175, Mill Dam Road, and Atlantic Road. There also is the potential for congestion at the Main Base gate, the single entry point into the installation. Construction-related traffic could include heavy equipment and transport vehicles, cranes, concrete trucks, dump/haul trucks, personnel transport vehicles, and others as necessary. Impacts to traffic from construction vehicles would be short-term, impacts would not result in LOS D on the affected roads, and impacts would be considered negligible.

Once operational, it is not anticipated that traffic on Route 175, Mill Dam Road, and Atlantic Road would introduce significant impacts. Assuming that up to 400 vehicle trips would occur during the morning and evening peak hours, this number would be well within the 2027 projected levels evaluated in the 2007 traffic study (NASA, 2007). The 2027 projected scenario identified future conditions at Route 13 to Route 175 would have an LOS of B to C, Route 175 to Mill Dam Road would have an LOS of A to B, and Route 175 to Atlantic Road would maintain an LOS of C. While there may be minor congestion at the Main Base gate in the morning and evening peak hours, it is not anticipated this would lead to a negative LOS on Mill Dam or Atlantic Roads. In summary, implementing Alternative 3 would not result in significant impacts to transportation.

WFF Potential Transportation Impacts:

- The No Action Alternative would not create any significant impacts.
- Alternative 3: Construction vehicles and equipment could temporarily cause congestion on Mill Dam Road.
- Alternative 3: Personnel traveling to and from WFF would not cause the LOS on Route 175 or Mill Dam Road to deteriorate to unacceptable levels. However, there may be congestion during the peak morning and evening rush hours at the Main Base gate.

8.8 Hazardous Materials and Wastes

This section discusses hazardous materials, hazardous waste, special hazards, and Environmental Restoration Program (ERP) sites. See Section 3.9 for the resource definition, regulatory setting, and the approach to analysis.

8.8.1 Affected Environment

The affected environment for hazardous materials, hazardous waste, special hazards, and ERP sites consists of the airfield at WFF.

8.8.1.1 Hazardous Materials

The WFF Integrated Contingency Plan, developed by NASA to meet the requirements of 40 CFR part 112 (Oil Pollution Prevention and Response), 40 CFR part 265 subparts C and D (Hazardous Waste Contingency Plan), and 9 Virginia Administrative Code 25-91-10 (Oil Discharge Contingency Plan), serves as the facility's primary guidance document for the prevention and management of oil, hazardous material, and hazardous waste releases (NASA, 2015d). Hazardous materials used at WFF include fuel oils and petroleum products, ammonium perchlorate/aluminum, nitrocellulose/nitroglycerine, hydrazine, cutting fluids, solvents, flammables, paint thinners, and laboratory reagents.

8.8.1.2 Hazardous Waste

Hazardous wastes include solid wastes that are regulated as hazardous based on either direct listing by USEPA or characteristics such as ignitability, reactivity, corrosivity, and toxicity, as well as those contaminants present in environmental media (e.g., soil or groundwater). The WFF Main Base is classified as Large Quantity Generator (i.e., over 2,205 pounds [1,000 kilograms] per month) under the Resource Conservation and Recovery Act (RCRA) (USEPA Identification No. VA8800010763). The Main Base maintains three separate hazardous waste storage areas for less-than-90-days accumulation; however, Building B-29 is the primary accumulation area designated for wastes generated on the installation (NASA, 2015d). In 2015, 50,779 pounds of hazardous waste were generated on the Main Base (NASA, 2016a).

8.8.1.3 Special Hazards (Asbestos Containing Materials, Lead Based Paint, Polychlorinated Biphenyls)

The WFF manages asbestos materials and waste in accordance with Goddard Procedural Requirement 1840.1, Asbestos Program Management. Disposal of materials containing asbestos, lead, and polychlorinated biphenyls (PCBs) are managed in accordance with Goddard Procedural Requirement 8500.3, Waste Management. Facilities scheduled for maintenance, renovation, remodeling, or demolition are inspected for the presence of asbestos-containing material, as required by law or as a precautionary measure when asbestos-containing material is to be removed through outside contracts by licensed specialized firms (NASA, 2016a).

As buildings are renovated or demolished, lead-based paint issues are resolved. Any abatement or removal is done by licensed lead removal professionals and typically disposed of by a licensed removal contractor (NASA, 2016a).

PCB contamination at WFF is concentrated within a single building on the Main Base. The contaminated room is locked and access is limited (NASA, 2016a).

8.8.1.4 Environmental Restoration Program

The WFF ERP is responsible for the planning, implementation, and oversight of the investigation of past site activities to ensure the protection of human health and the environment. Several Areas of Concern (AOCs) have been identified at WFF. Currently, NASA has 27 Comprehensive Environmental Response, Compensation, and Liability Act sites (10 of which are active); 22 petroleum sites (1 of which is active); and 15 Formerly Used Defense Sites (13 of which are active); and 104 Former Navy AOCs (3 of which require site investigations). Figure 8-5 provides the location of the AOCs in the vicinity of the project area at WFF. Land use restrictions and institutional controls exist at the active sites to prevent future development and groundwater usage (NASA, 2016a).

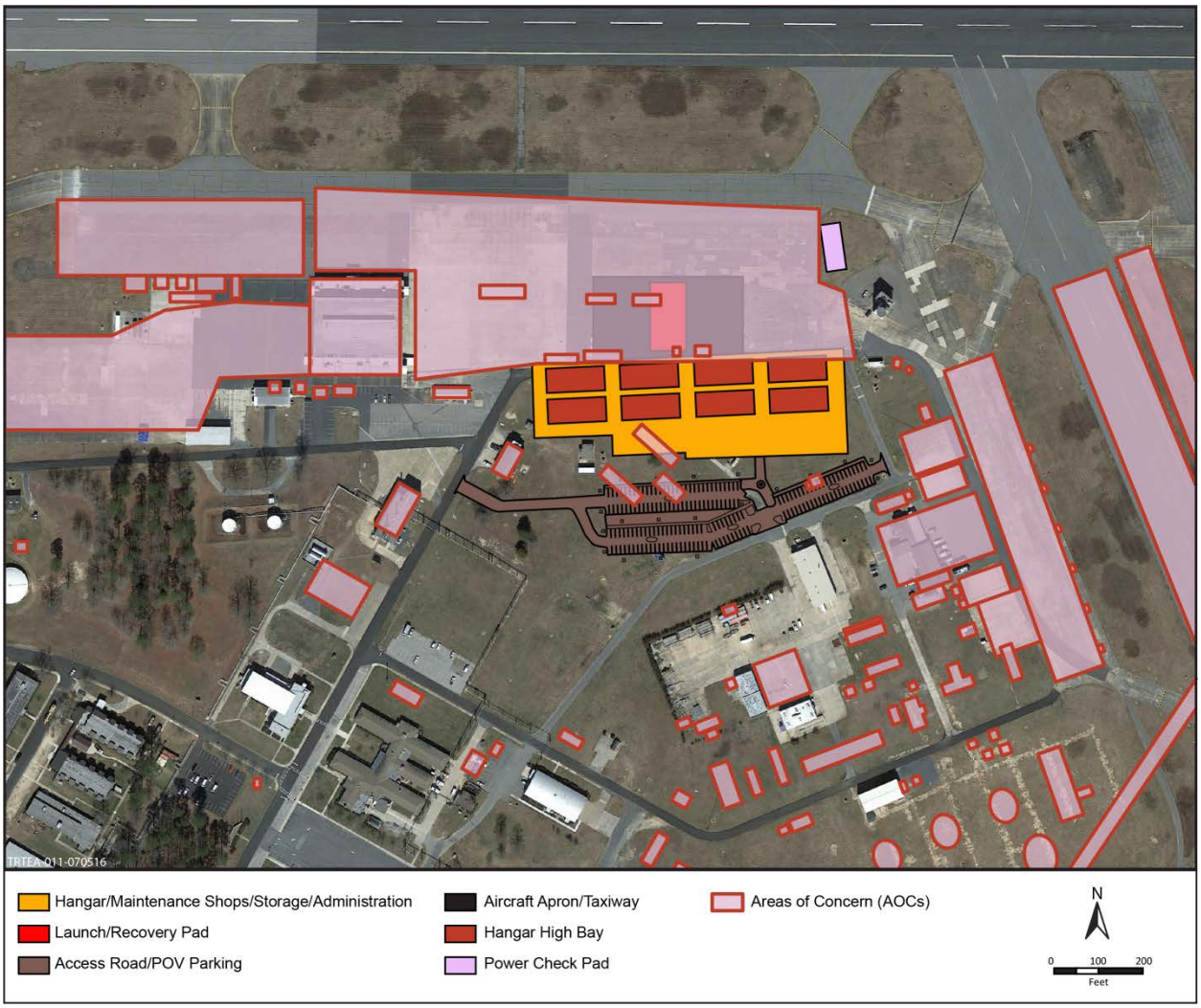


Figure 8-5 Existing Areas of Concern on Wallops Flight Facility Main Base

8.8.2 Environmental Consequences

This section analyzes impacts related to hazardous materials, hazardous waste, special hazards, and ERP sites and the potential for these substances to be introduced into the environment during the course of any construction/demolition activities or during Triton UAS operations and maintenance.

8.8.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change associated with hazardous materials and wastes. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

8.8.2.2 Alternative 3: Wallops Flight Facility, Virginia

Hazardous Materials and Waste

Construction and demolition activities would require the use of certain hazardous materials (e.g., paints, welding gases, solvents, preservatives, sealants). It is anticipated that the quantity of products containing hazardous materials used for construction and demolition activities would be minimal and their use would be of short duration. All hazardous wastes generated by construction and demolition

activities would be handled under the existing RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel. Therefore, no significant impacts from hazardous materials or waste would be expected from construction or demolition activities.

Once home based, the maintenance of the Triton UAS would require the use of certain hazardous materials. JP-5 fuel would be used and stored aboveground at WFF. Secondary containment is required at WFF for aboveground storage tanks over 55 gallons. JP-5 fuel to support Triton UAS would represent a new waste stream WFF Main Base; however, WFF routinely handles similar refined petroleum products for aviation and aerospace and would be properly prepared to receive the new fuel. It is anticipated that the quantity of products containing hazardous materials used to support Triton UAS flight operations and maintenance activities would be minimal. The quantity of hazardous wastes generated from maintenance activities would be minor and would not be expected to exceed the capacities of existing hazardous waste disposal facilities. All hazardous materials and wastes would be managed in accordance with the WFF Integrated Contingency Plan. Therefore, no significant impacts would be expected to hazardous materials or waste from maintenance activities or Triton UAS flight operations.

Special Hazards (Asbestos Containing Materials, Lead Based Paint, Polychlorinated Biphenyls)

Any structures proposed for upgrade or retrofit would be inspected for asbestos containing material and lead-based paint according to established WFF procedures. All asbestos containing material would be properly removed and disposed of prior to or during demolition in accordance with 40 CFR part 61.40-157, Virginia regulation 9 Virginia Administrative Code 20-81-620, and established WFF procedures. Any lead-based paint would be managed and disposed of in accordance with Toxic Substances Control Act, Occupational Safety and Health Administration regulations, Virginia requirements, and established WFF procedures. Therefore, no significant impacts to special hazards would occur from implementing Alternative 3.

Environmental Restoration Program

The U.S. Army Corps of Engineers (USACE) submitted a draft Site Investigation report in the fall of 2015 of various Formerly Used Defense Sites (FUDS) at NASA WFF Main Base. The USACE is currently in negotiations with NASA, the USEPA, and the Virginia DEQ on finalizing the Site Investigation. If necessary, construction measures (e.g., vapor barrier) could be incorporated to protect human health from detected concentrations of tetrachloroethylene and trichloroethylene in the upper aquifer groundwater below the proposed Alternative 3, WFF site. Under Alternative 3, no significant impacts are anticipated through continued close coordination among NASA, USEPA, and the Virginia DEQ.

9 Alternative 3: Wallops Flight Facility, Virginia Cumulative Impacts

9 ALTERNATIVE 3: WALLOPS FLIGHT FACILITY, VIRGINIA CUMULATIVE IMPACTS

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

Cumulative effects could result from individually minor, but collectively significant actions that take place over time. Accordingly, a cumulative effects analysis identifies and defines the scope of other actions and their interrelationship with the alternatives if there is an overlap in space and time. Cumulative effects are most likely to occur when there is an overlapping geographic location and a coincidental or sequential timing of events.

For the purposes of this analysis, the temporal span of Alternative 3 is considered the time during which construction of Triton UAS facilities would occur to the time when the aircraft are fully operational (i.e., between 2017 and 2023). For most resources, the spatial area for consideration of cumulative effects is limited to the installation on which an activity would occur, which would include WFF Main Base. Past actions are those actions, and their associated impacts, that occurred within the geographical extent of cumulative effects that have shaped the current environmental conditions of the study area. CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions (Connaughton, 2005). Recent past actions with continuing ongoing effects that are germane to cumulative impacts are discussed in respect to present and reasonably foreseeable future actions.

9.1 Past, Present, and Reasonably Foreseeable Actions

Based on a review of past, present, and reasonably foreseeable future actions within the study area of Alternative 3 at WFF, it was determined that several actions should be considered when analyzing the potential cumulative impacts of the actions.

9.1.1 Past Actions

The Main Base property was acquired in 1942. In 1943, three runways and numerous buildings were constructed to train naval aviation units. Given the distant past from which these actions occurred, the potential for cumulative impacts to any resource area, when combined with Alternative 3, would not be anticipated.

9.1.2 Present and Reasonably Foreseeable Actions

Airfield Pavement Repairs and Improvements. WFF prepared a 2014 Record of Environmental Consideration in accordance with the 2005 WFF Site-wide Environmental Assessment for airfield runway surface maintenance activities. These activities include operation of a milling machine to remove parts of the surface area, crack repairs, surface sealing and painting. Grass areas adjacent to the runways will be graded to improve surface drainage and airfield lighting will be added (NASA, 2014d). The resurfacing project is currently underway.

Wallops Research Park. The 2008 EA assessed the development of the Wallops Research Park adjacent to the Main Base on approximately 202 acres of lands owned by NASA, Accomack County, and the Chincoteague Bay Field Station. Still under development, the research park will consist of a multi-use area dedicated to public recreational facilities, non-retail commercial and government space, and science research and educational facilities (NASA, 2008c).

***Restricted Area Airspace R-6604C/D/E at Wallops Flight Facility*.** With the purpose of safely segregating civil air traffic from flight testing of unproven and experimental aerial systems, NASA has requested the FAA to expand R-6604 by adding new airspace designated R-6604C/D/E. R-6604C would incorporate airspace from the ground surface up to, and including, 3,500 feet AGL; would be linked to R-6604A/B; and would extend through and beyond the NASA Class D airspace. Similarly, R-6604D would extend from 100 feet AGL to 3,500 feet AGL; whereas, R-6604E would span from 700 feet AGL to 3,500 feet AGL. Similar to existing R-6604A/B, each new section of airspace would be activated separately, as needed. WFF has prepared an EA for this action. The draft EA was released for public and agency review on July 1, 2016.

E-2/C-2 Field Carrier Landing Practice Operations. This 2013 EA evaluated the Navy's Fleet Forces Command's proposed action to conduct regular, scheduled E-2C Hawkeye, E-2D Advanced Hawkeye, and C-2A Greyhound (E-2/C-2) field carrier landing operations at the Main Base airfield (U.S. Navy, 2013). The Navy selected WFF as their preferred alternative and began conducting operations in the fall of 2013. Up to 45,000 operations occur annually with 30,000 operations in the five-plane field carrier landing practice patterns and 15,000 operations in the three-plane pattern. Approximately half of the Navy E-2/C-2 training is conducted during daylight hours and half during nighttime hours. Aircraft refueling and overnight detachments are also associated with this action at WFF.

9.2 Resource Analysis

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources, quantifiable data are not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA. Following review of past, present, and reasonably foreseeable projects, each of the actions that would have the potential to interact with Alternative 3 would be the airfield pavement repairs and improvement project, Wallops Research Park build out, and R-6604 airspace expansion in adjacent airspace. As presented in Chapter 8, E-2/C-2 operations are already part of existing conditions.

After evaluation of the actions that interrelate in geography and time, the following resources would most likely be affected by Alternative 3 and are carried forward for cumulative impact analysis: noise, public health and safety, air quality, socioeconomics, and transportation. No other resources would be impacted by these actions. As such, no cumulative effects from Alternative 3 at WFF, when considered with past, present, and reasonably foreseeable actions, are anticipated for water resources, cultural

resources, and hazardous materials and wastes. These resources are therefore not carried forward for more detailed cumulative impact analyses under Alternative 3 at WFF.

9.2.1 Noise

The airfield pavement repairs project would include the use of heavy equipment to prepare the runway surface area that would result in increased noise levels within the immediate area. However, noise level increases would be temporary and typical of standard construction activities. Overall, construction activities at and within the vicinity of the WFF airfield would collectively increase noise levels in the area temporarily, but variations in the timing of cumulative projects, and the relatively short duration of these noise effects, would moderate impacts over space and time. Cumulatively, present and reasonably foreseeable aircraft operations were accounted for in the E-2/C-2 operations EA and incorporated into the noise analysis found in Section 8.1.1, under baseline conditions. The 45,000 operations also represent what is anticipated in terms of future activities at WFF. Therefore, the dominant sources of noise at the WFF would continue to be aircraft operations. Cumulatively, no significant impacts to the acoustic environment would be expected.

Noise generated by activities outside of WFF airfield, such as vehicle traffic and general ambient sounds generated by horns, sirens, and construction would continue as found under existing conditions and contribute to the overall noise environment. However, when considered along with Alternative 3 activities would not introduce significant noise levels to affect public health.

9.2.2 Public Health and Safety

Cumulatively, implementation of Alternative 3 and expansion of R-6604 would broaden the airspace under direct air traffic control for aircraft operations out of the WFF airfield. This would create better separation among civilian and commercial air traffic and NASA/military operations emanating from WFF. Therefore, when these two actions are considered cumulatively there would be no adverse or significant impacts to public health and safety through mishaps or accident potential by implementing Alternative 3 at WFF.

9.2.3 Air Quality

Construction activities related to Alternative 3, improvement projects on WFF, and personnel increases would generate air pollutant and GHG emissions (see section 8.3.2.2). Construction-related activities would include the use of heavy equipment for site preparation and development that would result in criteria pollutant and GHG emissions within the immediate area. However, air emissions would be temporary and typical of standard construction activities. Overall, construction activities at and within the vicinity of the WFF airfield would collectively increase air emissions and GHGs in the area temporarily, but variations in the timing of cumulative projects, and the relatively short duration of project effects, would moderate impacts over space and time.

Cumulatively, construction-related air emissions would be a small percentage of overall air emissions in the Northeastern Virginia Intrastate AQCR. These cumulative emissions would not change the attainment status of the AQCR or introduce a significant increase in GHG emissions. Therefore, the cumulative effect of these construction-related actions would not result in significant, cumulative impacts to air quality.

Once the home basing is completed, Triton UAS operations and commuting personnel would contribute less than 1 percent of criteria pollutants in Accomack County (see Table 8-5). When considered

cumulatively with present and foreseeable aircraft operations, the percent contribution of emissions would introduce pollutant levels that would not change the attainment status of the AQCR.

Emissions of GHGs from these cumulative activities alone would not cause global warming that could lead to climate change. However, these emissions would increase the atmosphere's concentration of GHGs and could incrementally contribute to global warming.

9.2.4 Socioeconomics

Under Alternative 3, WFF, no significant impacts to the population and employment would be anticipated. A temporary positive boost to the local economy would be generated by new construction. No significant, cumulative impacts are anticipated to population, employment, and income by implementing Alternative 3 at WFF.

9.2.5 Transportation

Construction activities at WFF would require the movement of heavy equipment and construction workers on Route 175 and Mill Dam and Atlantic Roads. This could lead to minor traffic delays and temporary congestion at the Main Base gate; however, no long-term cumulative impacts to traffic would be expected to degrade overall LOS in the local traffic network.

10 Other Considerations Required by the National Environmental Policy Act

10 OTHER CONSIDERATIONS REQUIRED BY THE NATIONAL ENVIRONMENTAL POLICY ACT

10.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 Code of Federal Regulations (CFR) part 1502.16(c), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state and local land use plans, policies, and controls. Table 10-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action, and describes briefly how compliance with these laws and regulations would be accomplished.

Table 10-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	***Status of Compliance***
National Environmental Policy Act (NEPA) (42 United States (U.S.) Code [U.S.C.] section 4321 et seq.); Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR parts 1500-1508; Navy procedures for Implementing NEPA (32 CFR part 775 and Office of Chief of Naval Installations Instruction [OPNAVINST] 5090.1D); and National Aeronautics and Space Administration's regulations at 14 CFR part 1216.3.	This Environmental Assessment (EA) has been prepared in accordance with the Council on Environmental Quality regulations implementing NEPA, and Navy and National Aeronautical and Space Administration (NASA) NEPA procedures. The appropriate public participation and review are being conducted in compliance with NEPA.
Clean Air Act (42 U.S.C. section 7401 et seq.)	The air quality analysis in the EA concludes that under Alternatives 1, 2, or 3, proposed emissions: (1) would not create a major regional source of air pollutants or affect the current attainment status at Naval Air Station (NAS) Key West and Naval Station (NS) Mayport in Florida, or at the NASA Wallops Flight Facility (WFF) in Virginia, and (2) would comply with all applicable state and regional air agency rules and regulations.
Clean Water Act (CWA) (33 U.S.C. section 1251 et seq.)	Permits under CWA Section 404 would be required to implement Alternative 1 at NAS Key West. Should this alternative be identified for implementation, all required permits would be acquired prior to any ground disturbance activities in regulated areas. In addition, any required mitigation measures would be implemented in accordance with the permit requirements. At any of the three alternative locations, stormwater runoff and operational activities would be managed in accordance with the installations' Storm Water Pollution Prevention Plan (SWPPP) and applicable federal and state stormwater and erosion best management practices (BMPs).

Table 10-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	*Status of Compliance*
Coastal Zone Management Act (CZMA) (16 U.S.C. section 1451 et seq.)	The Navy and NASA have determined that implementing the Proposed Action at either of the two Florida alternative locations is consistent, to the maximum extent practicable, with the enforceable policies of the Florida Coastal Management Program and implementing the Proposed Act at the Virginia alternative location is fully consistent with the enforceable policies of the Virginia State Coastal Zone Management Programs. Federal Coastal Consistency Determinations are found in Appendix B. The applicable Federal Coastal Consistency Determinations were submitted to the Florida Department of Environmental Protection (FDEP) and Virginia Department of Environmental Quality (DEQ) for review.
National Historic Preservation Act (NHPA) (Section 106, 16 U.S.C. section 470 et seq.)	The Navy determined that there would be no effects to archeological resources or listed or eligible historic properties by implementing Alternative 1 (NAS Key West), or Alternative 2 (NS Mayport), or Alternative 3 (Wallops Flight Facility). The Navy concluded that the project at all alternative sites warranted a finding of "No Historic Properties Affected" and conveyed this determination to the Florida SHPO by letter dated July 6, 2016 and the Virginia Department of Historic Resources by letter dated July 14, 2016. The Virginia Department of Historic Resources concurred with the Navy determination for Alternative 3 on August 10, 2016.

	Pursuant to the ESA, Alternative 1 at NAS Key West: • may affect, but is not likely to adversely affect the LKMR; • may affect, but is not likely to adversely affect American crocodiles and would have no effect on critical habitat because no such habitat is located in the project area; • may affect, but is not likely to adversely affect silver rice rats and would have no effect on critical habitat because the project area does not support such habitat; • may affect, but is not likely to adversely affect green, hawksbill, leatherback, and loggerhead sea turtles or their hatchlings and would have no effect on their critical habitat because none is located in the project area; and • may affect, but is not likely to adversely affect piping plovers, red knots, roseate terns and would have no effect on piping plover habitat because no such habitat is located in the project area.
Endangered Species Act (ESA) (16 U.S.C. section 1531 et seq.)	The Navy initiated informal consultation with the USFWS South Florida Ecological Services Office on June 2, 2016; a response is pending. Pursuant to the ESA, Alternative 2 at NS Mayport: • may affect, but is not likely to adversely affect, piping plovers and would have no effect on their critical habitat because none is located in the project area; • may affect, but is not likely to adversely affect, red knots; • may affect, but is not likely to adversely affect, wood storks; • may affect, but is not likely to adversely affect, green sea turtles and would have no effect on their critical habitat because none is located in the project area; • may affect, but is not likely to adversely affect, leatherback sea turtles and would have no effect on their critical habitat because none is located in the project area; and • may affect, but is not likely to adversely affect, loggerhead sea turtles and would have no effect on their critical habitat because none is located in the project area.

Table 10-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	*Status of Compliance*
Endangered Species Act (ESA) (16 U.S.C. section 1531 et seq.)	The Navy initiated informal consultation with the USFWS North Florida Ecological Services Office on June 10, 2016. On July 14, 2016, the USFWS concurred with the Navy findings. Alternative 3 at WFF: • Would have no effect on northern long-eared bats and would have no effect on their critical habitat, as there is none located in the project area.
Migratory Bird Treaty Act (MBTA) (16 U.S.C. sections 703-712)	Pursuant to the MBTA, no harm or incidental takes of migratory birds is anticipated under Alternatives 1, 2, or 3.
Bald and Golden Eagle Protection Act (16 U.S.C. section 668-668d)	Pursuant to the Bald and Golden Eagle Protection Act, no harm or incidental takes of bald eagles is anticipated under Alternatives 1, 2, or 3.
Noise Control Act of 1972 and Quiet Communities Act of 1978	A less than 1 dB DNL increase in noise levels from Triton UAS operations would likely not be noticeable at any of the three alternative locations. Therefore, the Proposed Action is consistent with these acts.
Executive Order (EO) 11988, Floodplain Management, amended by EO 13690, Establishing a Federal Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input	Under Alternative 1, the Proposed Action would be located within the 100-year and 500-year floodplain. As the Proposed Action would occur at an existing air station and the airfield is located entirely within a floodplain, there is no practicable alternative to avoid occupancy or development within the floodplain. In accordance with EOs 11988 and 13690, new construction would be designed to reduce the risk of flood loss and to minimize the impact of floods on human safety, health, and welfare.
EO 12088, Federal Compliance with Pollution Control Standards	Regardless of the alternative implemented, the Navy and/or NASA would adhere to and comply with all federal, state, and local pollution control standards.
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations	The Proposed Action would not disproportionately affect minority or low-income populations if Alternative 1, 2, or 3 were implemented.
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	The Proposed Action would not affect children's health or safety risks if Alternative 1, 2, or 3 were implemented.
EO 13693, Planning for Federal Sustainability in the Next Decade, that supersede and revokes Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management	Regardless of the alternative implemented, the Navy and/or NASA would implement environmental management systems to ensure integrated, continuously improving, efficient, and sustainable practices in federal facility operation.

Table 10-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	*Status of Compliance*
EO 13175, Consultation and Coordination with Indian Tribal Governments	The Proposed Action would not affect traditional cultural properties if Alternative 1, 2, or 3 were implemented.
EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance	The Proposed Action would increase energy and water consumption at any of the three alternative locations. However, the installations and the communities in which they are located have the capacity to provide both energy and water without appreciable changes from baseline conditions.

10.1.1 Coastal Zone Management

The federal CZMA of 1972 establishes a federal-state partnership to provide for the comprehensive management of coastal resources. Coastal states and territories develop site-specific coastal management programs based on enforceable policies and mechanisms to balance resource protection and coastal development needs. The state coastal management program lays out the policy to guide the use, protection, and development of land and ocean resources within the state's coastal zone. Under the act, federal activity in, or affecting, a coastal zone requires preparation of a Federal Consistency Determination. In other words, any federal agency proposing to conduct or support an activity within or outside the coastal zone that will affect any land or water use or natural resource of the coastal zone is required to do so in a manner consistent with the CZMA or applicable state coastal zone program to the maximum extent practicable. However, federal lands, which are "lands the use of which is by law subject solely to the discretion of…the Federal Government, its officers, or agents," are statutorily excluded from the state's "coastal zone." If, however, the proposed federal activity has the potential to affect coastal resources or uses beyond the boundaries of the federal property (i.e., has spillover effects), the CZMA Section 307 federal consistency requirement applies. As federal agencies, the Navy and NASA are required to determine whether the proposed activities would have the potential to affect the coastal zone. For all three of the project alternatives analyzed, it was determined that there is the potential for the Proposed Action to affect the coastal zones of Florida or Virginia.

10.1.1.1 Alternative 1: Naval Air Station Key West, Florida

The FDEP is responsible for directing the implementation of the statewide coastal management program. At NAS Key West, the preservation of coastal resources is part of the overall natural resources management program (U.S. Navy, 2014). Under Alternative 1, the entirety of the area proposed for development lies within the coastal zone. To comply with the federal CZMA, NAS Key West evaluated its proposal in terms of consistency with the CZMA. The air station determined that implementing Alternative 1 would be consistent to the maximum extent practicable with Florida's Coastal Management Program and a Federal Consistency Determination was sent to the FDEP on July 11, 2016, and included in Appendix B.

10.1.1.2 Alternative 2: Naval Station Mayport, Florida

As with NAS Key West, FDEP is responsible for the statewide coastal management program. At NS Mayport, the preservation of coastal resources is part of the overall natural resources management

program (U.S. Navy, 2006). Under Alternative 2, the entirety of the area proposed for development lies within the coastal zone. To comply with the federal CZMA, NS Mayport evaluated its proposal in terms of consistency with the CZMA. The station determined that implementing Alternative 2 would be consistent to the maximum extent practicable with Florida's Coastal Management Program and a Federal Consistency Determination was sent to the FDEP on July 11, 2016, and included in Appendix B.

10.1.1.3 Alternative 3: Wallops Flight Facility, Virginia

Virginia's DEQ is responsible for the statewide coastal management program. At WFF, the preservation of coastal resources is part of the overall natural resources management program (NASA, 2008). Under Alternative 3, the entirety of the area proposed for development lies within the coastal zone. To comply with the federal CZMA, WFF evaluated its proposal in terms of consistency with the CZMA. It was determined that implementing Alternative 3 would be fully consistent with Virginia's Coastal Zone Management Program and a Federal Consistency Determination was sent to the Virginia DEQ on August 9, 2016 and included in Appendix B.

10.2 Irreversible or Irretrievable Commitments of Resources

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Implementation of Alternatives 1, 2, or 3 would involve irretrievable commitments of non-renewable and renewable resources. With regard to the infrastructure improvements, resources such as capital, labor, fuels, and construction materials would be committed. The total amount of construction materials (e.g., concrete, insulation, wiring, etc.) required for this action is relatively small when compared to the resources available in the regional areas of Monroe County (Alternative 1, NAS Key West), Duval County (Alternative 2, NS Mayport), or Accomack County (Alternative 3, WFF). The construction materials and energy required for construction and operations are not in short supply; their use would not have an adverse impact on the continued availability of these resources, and the energy resource commitment is not anticipated to be excessive in terms of region-wide use.

All infrastructure upgrades would comply with EO 13693, *Planning for Federal Sustainability in the Next Decade*, and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. EO 13693 sets goals for federal agencies in areas such as energy efficiency, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, and water conservation. EO 13514 mandates that federal agencies meet numerical and non-numerical targets. For example, EO 13514 requires that 95 percent of all new contracts require the use of water-efficient fixtures, low-flow fixtures, nontoxic or less toxic products, and energy-efficient products. This EO also requires that all new construction comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* (U.S. Environmental Protection Agency [USEPA], 2006), Memorandum of Understanding among U.S. federal agencies. Principles include, but are not limited to employing design and construction strategies that increase energy efficiency, eliminate solid waste, and reduce stormwater runoff.

10.3 Unavoidable Adverse Impacts

This EA has determined that the alternatives considered would not result in any unavoidable adverse impacts. Climate change, however, could adversely impact future Navy and NASA missions as sea level rise continues, water surges and flooding increase along the shorelines, saltwater invades freshwater sources, and temperatures rise cause agricultural issues and habitat changes.

10.4 Relationship between Short-Term Use of the Environment and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

As discussed in Chapters 4 through 9, environmental consequences for each of the alternative locations, the Proposed Action would result in both short- and long-term environmental effects. However, implementing Alternative 1, 2, or 3 is not expected to result in the types of impacts that would reduce environmental productivity, affect biodiversity, or narrow the range of potential long-term beneficial uses of the environment.

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11 REFERENCES CITED

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11.7 Chapter 10—Other Considerations Required by the National Environmental Policy Act

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13 Distribution Lists

13 DISTRIBUTION LISTS

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Dr.	Robin	Lockwood	President	Key West Chamber of Commerce	Key West	FL	33040
Mr.	David	Yamold	President	Florida Keys Audubon Society	Tavernier	FL	33070
Mr.	Keith	Douglass	Director	Florida Keys Land Trust	Marathon	FL	33050
Mr.	Chris	Bergh		The Nature Conservancy	Big Pine Key	FL	33043

13-2 Alternatives 1 and 2 Distribution List

Salutation	*First*	*Last*	*Title*	*Organization*	*Town*	*State*	*Zip*
Mr.	Bob	Cardenas	President, Chairman and CEO	Reef Relief	Key West	FL	33040
	Naja	Girard	President	Last Stand	Big Pine Key	FL	33043
Ms.	Lorraine	Phelps	Director	Key Haven Civic Association	Key West	FL	33040
Mr.	Robert	Murphy	President	Tamarac Park Property Owners Association, Inc.	Key West	FL	33040
Alternative 2, NS Mayport							
Senator	Aaron	Bean	District 4	Florida Senate	Jacksonville	FL	32207
Senator	Audrey	Gibson	District 9	Florida Senate	Jacksonville	FL	32202
Representative	Janet	Adkins	District 11	Florida Legislature	Jacksonville Beach	FL	32250
Representative	Lake	Ray	District 12	Florida Legislature	Jacksonville	FL	32216
Governor	Rick	Scott	Governor of Florida	Florida	Tallahassee	FL	32399
Mayor	Lenny	Curry	Mayor	City of Jacksonville	Jacksonville	FL	32202
Mr.	Bill	Gulliford	District 13	City Council	Jacksonville	FL	32202
Mr.	Aaron	Bowman	District 3	City Council	Jacksonville	FL	32202
Mayor	Mitchell	Reeves	Mayor	Mayor Atlantic Beach	Atlantic Beach	FL	32233
Mayor	Harriet	Pruette	Mayor	Mayor Neptune Beach	Neptune Beach	FL	32266
Mayor	Charles	Lathem	Mayor	Mayor Jacksonville Beach	Jacksonville Beach	FL	32250
Mr.	Bill	Spann	City of Jacksonville	Military and Veterans Affairs Office	Jacksonville	FL	32202
Mr.	Harrison	Conyers	City of Jacksonville	Military and Veterans Affairs Office	Jacksonville	FL	32202
Mr.	Brian	Taylor	CEO	Jacksonville Port Authority	Jacksonville	FL	32206
Mr.	Ray	Alfred	Chairman	Jacksonville Airport Authority	Jacksonville	FL	32229
Major General	Michael	Calhoun	The Adjutant General of Florida	City of Jacksonville Council	St. Augustine	FL	32084
Councilman	Greg	Anderson	President	City of Jacksonville Council	Jacksonville	FL	32202
Director	Bill	Killingsworth	Director of Planning	City of Jacksonville	Jacksonville	FL	32202
Director	Daryl	Joseph	Parks, Recreation and Community Services	City of Jacksonville	Jacksonville	FL	32202

13-2 Alternatives 1 and 2 Distribution List

Salutation	*First*	*Last*	*Title*	*Organization*	*Town*	*State*	*Zip*
Director	David	Clark	Director of Florida State Lands	State of Florida	Tallahassee	FL	32399

13-3 Alternative 3 Distribution List

Salutation	*First*	*Last*	*Title*	*Organization*	*Town*	*State*	*Zip*
Mr.	William	Tarr	District 1	Accomack County Board of Supervisors	Chincoteague	VA	23336
Mr.	Ronald	Wolff	District 2	Accomack County Board of Supervisors	Atlantic	VA	23303
Mr.	Grayson	Chesser	District 3	Accomack County Board of Supervisors	Sanford	VA	23426
Mr.	Paul	Muhly	District 4	Accomack County Board of Supervisors	Parksley	VA	23421
Mr.	Harrison	Phillips	District 5	Accomack County Board of Supervisors	Bloxom	VA	23308
Mr.	Robert	Crockett	District 6	Accomack County Board of Supervisors	Onancock	VA	23417
Ms.	Laura Belle	Gordy	District 7	Accomack County Board of Supervisors	Onley	VA	23418
Mr.	Donald	Hart, Jr.	District 8	Accomack County Board of Supervisors	Keller	VA	23401
Mr.	C. Reneta	Major	District 9	Accomack County Board of Supervisors	Painter	VA	23420
Senator	Lynwood	Lewis, Jr.	District 6	Virginia Senate	Accomac	VA	23301
Delegate	Bloxon	Robert	District 100	Virginia House of Delegates	Mappsville	VA	23407
Governor	Terry	McAuliffe	Governor of Virginia	Commonwealth of Virginia	Richmond	VA	23218
Mr.	Rex	Simpkins	President	Somerset County Board of Commissioners	Princess Anne	MD	21853
Mr.	Michael	Lipford	Executive Director	The Nature Conservancy	Nassawadox	VA	23413
Mayor	John	Tarr	Mayor	Town of Chincoteague	Chincoteague	VA	23336
Mr.	Matt	Holloway	President	Wicomico County Council	Salisbury	MD	21801
Mr.	James	Church	President	Worcester County Board of Supervisors	Snow Hill	MD	21863
Ms.	Kristi	Ashley	Environmental Specialist	Federal Aviation Administration, Operations Support Group	Wallops Island	VA	23337
Mr.	Doug	Crawford	Director	National Oceanic and Atmospheric Administration, Wallops Command and Data Acquisition Station	Wallops Island	VA	23337

13-3 Alternative 3 Distribution List

Salutation	*First*	*Last*	*Title*	*Organization*	*Town*	*State*	*Zip*
Ms.	Deborah	Darden	Superintendent	National Park Service, Assateague Island National Seashore	Berlin	MD	21811
CW04	Trevor	Dalee	Engineering Officer	U.S. Coast Guard, SFO Eastern Shore	Chincoteague	VA	23336
Mr.	John	Gironda	Environmental Compliance and Safety Project Manager	National Oceanic and Atmospheric Administration, NESDIS Management Operations & Analysis Division	Silver Spring	MD	20910
Mr.	Kevin	Sloan	Refuge Manager	U.S. Fish and Wildlife Service, Chincoteague National Wildlife Refuge	Chincoteague	VA	23336
Mr.	Christopher	Jarboe	Team Lead	NAVAIR Ranges Sustainability Office, Atlantic Test Range	Patuxent River	MD	20670
Ms.	Cindy	Schulz	Supervisor	U.S. Fish and Wildlife Service, Ecological Services, Virginia Field Office	Gloucester	VA	23061

Notice of the EA was distributed to the following federally recognized Tribes:

13-4 Federally Recognized American Indian Tribes Distribution List

Alternative	*Salutation*	*First*	*Last*	*Title*	*Organization*	*Town*	*State*	*Zip*
NAS Key West/ NS Mayport	Mr.	James E.	Billie	Chairman	Seminole Tribe of Florida	Hollywood	FL	33024
	Dr.	Paul N.	Backhouse	Tribal Historic Preservation Officer	Seminole Tribe of Florida	Clewiston	FL	33440
NS Mayport	Mr.	Colley	Billie	Chairman	Miccosukee Tribe of Indians	Miami	FL	33144
	Mr.	Fred	Dayhoff	Tribal Historic Preservation Officer	Miccosukee Tribe of Indians	Ochopee	FL	34141
	Mr.	Leonard M.	Harjo	Principal Chief	The Seminole Nation of Oklahoma	Wewoka	OK	74868
	Ms.	Natalie	Harjo	Tribal Historic Preservation Officer	The Seminole Nation of Oklahoma	Wewoka	OK	74868
Wallops Flight Facility	Mr.	Norris	Howard	Paramount Chief	Pocomoke Indian Nation	Eden	MD	21822
	Dr.	Caitlin	Totherow	Tribal Historic Preservation Officer	Catawba Indian Nation	Rock Hill	SC	29730

Hard copies of the EA were distributed to the following libraries:

13-5 Libraries List by Alternative

Alternative	*Organization*	*Street*	*Town*	*State*	*Zip*
NAS Key West	Florida Keys Community College Library	5901 College Road	Key West	FL	33040
	Monroe County Public Library	700 Fleming Street	Key West	FL	33040
NS Mayport	Beaches Library	600 3rd Street	Neptune Beach	FL	32266
	Main Library	303 N. Laura Street	Jacksonville	FL	32202
	Public Library	25 N. 4th Street	Fernandina Beach	FL	32034
Wallops Flight Facility	Wallops Flight Facility Visitors Center	Building J20, VA-175	Wallops Island	VA	23337
	Chincoteague Island Library	4077 Main Street	Chincoteague Island	VA	23336
	Pocomoke Public Library	301 Market Street	Pocomoke	MD	21851
	Eastern Shore Public Library	23610 Front Street	Accomac	VA	23301

14 Persons and Agencies Contacted

14 PERSONS AND AGENCIES CONTACTED

The following persons were contacted during development of this EA.

Naval Air Station Key West

Timothy A. Parsons
Division Director and State Historic Preservation Officer
500 S. Bronough Street
Tallahassee, FL 32399

Shawn Christopherson
U.S. Fish & Wildlife Service
South Florida Ecological Services Office
1339 20th Street
Vero Beach, FL 32960-3559

Chris Stahl
Clearinghouse Coordinator
Office of Intergovernmental Programs
Department of Environmental Protection
2600 Blair Stone Road MS 47
Tallahassee, FL 32399-2400

Naval Station Mayport

Timothy A. Parsons
Division Director and State Historic Preservation Officer
500 S. Bronough Street
Tallahassee, FL 32399

Jay Herrington
Field Supervisor
U.S. Fish & Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Chris Stahl
Clearinghouse Coordinator
Office of Intergovernmental Programs
Department of Environmental Protection
2600 Blair Stone Road MS 47
Tallahassee, FL 32399-2400

Wallops Flight Facility

Marc Holma
Division of Review and Compliance
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Bettina Sullivan
Department of Environmental Quality
Office of Environmental Impact Review
629 East Main Street
6th Floor
Richmond, VA 23219

Cindy Schulz
Field Supervisor, Virginia Ecological Services
Virginia Field Office
U.S. Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061

Michael T. Tolbert
Chief of Management & Operations
Accomack County Public Schools
Accomac, VA 23301

Herman W. Rawlings
Navy Installation Housing Director
Wallops Island, VA 23337

APPENDIX A
Public Notifications, and Agency Correspondence and Coordination

NOTIFICATIONS

NAS Key West

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL ASSESSMENT FOR THE EAST COAST HOME BASING OF THE MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM

The U.S. Department of the Navy (Navy) gives notice, per the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality Regulations (Code of Federal Regulations [CFR] sections 1500-1508), and Navy NEPA regulations (32 CFR section 775), that a Draft Environmental Assessment (EA) has been prepared. The EA evaluates potential environmental effects from home basing MQ-4C Triton unmanned aircraft system (Triton UAS) at one of three alternative locations on the East Coast: Naval Air Station Key West in Florida; Naval Station Mayport in Florida; and National Aeronautics and Space Administration Wallops Flight Facility in Virginia. The Draft EA is available for public comment and review for 30 days from September 1 to October 1, 2016. The comment period closes on October 1, 2016.

The Proposed Action would provide facilities and functions to operate and maintain the Triton UAS on the East Coast. The Triton UAS is an unmanned, unarmed, remotely controlled aircraft employed to enhance maritime intelligence, surveillance, and reconnaissance capabilities as part of the Navy's Maritime Patrol and Reconnaissance Force in the Atlantic Fleet's area of operations. Under the Proposed Action, the Navy plans to establish a launch and recovery site for four home based Triton UAS aircraft and support a consolidated maintenance hub for up to four additional aircraft undergoing maintenance actions (up to eight aircraft). The East Coast home base location would be a permanent duty station for up to 400 personnel, and about 500 family members, and support rotational deployments of personnel and aircraft outside the continental United States (OCONUS). Military construction projects in support of the home basing would begin in fiscal year 2017.

The Draft EA is available for public review at the following website: *http://www.public.navy.mil/usff/environmental/Pages/NEPAprojects.aspx*. Paper copies of the Draft EA are available for review at the following libraries in the greater Key West area:

- Monroe County Public Library, 700 Fleming Street, Key West, FL 33040
- Florida Keys Community College Library, 5901 College Road, Key West, FL 33040

Comments may be submitted in writing to: Navy MQ-4C Triton UAS Home Basing Project Manager, Naval Facilities Engineering Command Atlantic, Attn: Code EV21JB, 6506 Hampton Boulevard, Norfolk, VA 23508. Comments and must be postmarked no later than October 1, 2016 to ensure consideration in the Final EA.

NS Mayport

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL ASSESSMENT FOR THE EAST COAST HOME BASING OF THE MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM

The U.S. Department of the Navy (Navy) gives notice, per the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality Regulations (Code of Federal Regulations [CFR] sections 1500-1508), and Navy NEPA regulations (32 CFR section 775), that a Draft Environmental Assessment (EA) has been prepared. The EA evaluates potential effects from home basing and maintaining the MQ-4C Triton Unmanned Aircraft System (Triton UAS) at one of three alternative locations on the East Coast: Naval Air Station Key West in Florida; Naval Station Mayport in Florida; and National Aeronautics and Space Administration Wallops Flight Facility in Virginia. The Draft EA is available for public comment and review for 30 days from September 1 to October 1, 2016. The comment period closes on October 1, 2016.

The Proposed Action would provide facilities and functions to operate and maintain the Triton UAS on the East Coast. The Triton UAS is an unmanned, unarmed, remotely controlled aircraft employed to enhance maritime intelligence, surveillance, and reconnaissance capabilities as part of the Navy's Maritime Patrol and Reconnaissance Force in the Atlantic Fleet's area of operations. Under the Proposed Action, the Navy plans to establish a launch and recovery site for four home based Triton UAS aircraft and support a consolidated maintenance hub for up to four additional aircraft undergoing maintenance actions (up to eight aircraft). The East Coast home base location would be a permanent duty station for up to 400 personnel, and about 500 family members, and support rotational deployments of personnel and aircraft outside the continental United States (OCONUS). Military construction projects in support of the home basing would begin in fiscal year 2017.

The Draft EA is available for public review at the following website: *http://www.public.navy.mil/usff/environmental/Pages/NEPAprojects.aspx*. Paper copies of the Draft EA are available for review at the following libraries in the greater Jacksonville area:

- Beaches Library, 600 3rd Street, Neptune Beach, FL 32266
- Main Library, 303 N. Laura Street, Jacksonville, FL 32202
- Public Library, 25 N. 4th Street, Fernandina Beach, FL 32034

Comments may be submitted in writing to: Navy MQ-4C Triton UAS Home Basing Project Manager, Naval Facilities Engineering Command Atlantic, Attn: Code EV21JB, 6506 Hampton Boulevard, Norfolk, VA 23508. Comments must be postmarked no later than October 1, 2016 to ensure consideration in the Final EA.

Wallops Flight Facility

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL ASSESSMENT FOR THE EAST COAST HOME BASING OF THE MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM

The U.S. Department of the Navy (Navy) and the National Aeronautics and Space Administration (NASA) give notice, per the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality Regulations (40 Code of Federal Regulations [CFR] sections 1500-1508), Navy NEPA regulations (32 CFR section 775), and NASA NEPA Regulations (14 CFR section 1216), that a Draft Environmental Assessment (EA) has been prepared. The EA evaluates potential effects from home basing and maintaining the MQ-4C Triton Unmanned Aircraft System (Triton UAS) at one of three alternative locations on the East Coast: Naval Air Station Key West in Florida; Naval Station Mayport in Florida; and National Aeronautics and Space Administration Wallops Flight Facility in Virginia. The Draft EA is available for public comment and review for 30 days from September 1 to October 1, 2016. The comment period closes on October 1, 2016.

The Proposed Action would provide facilities and functions to operate and maintain the Triton UAS on the East Coast. The Triton UAS is an unmanned, unarmed, remotely controlled aircraft employed to enhance maritime intelligence, surveillance, and reconnaissance capabilities as part of the Navy's Maritime Patrol and Reconnaissance Force in the Atlantic Fleet's area of operations. Under the Proposed Action, the Navy plans to establish a launch and recovery site for four home based Triton UAS aircraft and support a consolidated maintenance hub for up to four additional aircraft undergoing maintenance actions (up to eight aircraft). The East Coast home base location would be a permanent duty station for up to 400 personnel, and about 500 family members, and support rotational deployments of personnel and aircraft outside the continental United States (OCONUS). Military construction projects in support of the home basing would begin in fiscal year 2017.

The Draft EA is available for public review at the following website: *http://www.public.navy.mil/usff/environmental/Pages/NEPAprojects.aspx*. Paper copies of the Draft EA are available for review at the following libraries in the Wallops Island area:

- Wallops Flight Facility Visitors Center, Building J20, VA-175, Wallops Island, VA 23337
- Chincoteague Island Library, 4077 Main Street, Chincoteague Island, VA 23336
- Pocomoke Public Library, 301 Market Street, Pocomoke City, MD 21851
- Eastern Shore Public Library, 23610 Front Street, Accomac, VA 23301

Comments may be submitted in writing to: Navy MQ-4C Triton UAS Home Basing Project Manager, Naval Facilities Engineering Command Atlantic, Attn: Code EV21JB, 6506 Hampton Boulevard, Norfolk, VA 23508. Comments must be postmarked no later than October 1, 2016 to ensure consideration in the Final EA.

GOVERNMENT TO GOVERNMENT

Butts, Jeffery CIV NAVFAC LANT, EV

From: Winter, Len E CIV NAVFAC SE, JAXS <len.winter@navy.mil>
Sent: Monday, August 01, 2016 10:09
To: Durig, Brock CIV NAVFAC SE, EV
Subject: FW: Triton UAS Project: NAS Key West and NS Mayport
Attachments: 5090 Ser N45 xxx L Winter TRITON STOF BACKHOUSE CONSULT 28 JULY 2016.pdf
Signed By: len.winter@navy.mil

-----Original Message-----
From: Winter, Len E CIV NAVFAC SE, JAXS
Sent: Friday, July 29, 2016 12:17 PM
To: paulbackhouse@semtribe.com
Subject: Triton UAS Project: NAS Key West and NS Mayport

Dr. Backhouse:

I am forwarding you this e-copy of a Section 106 consultation letter that will hopefully leave here today via FEDEX for delivery to your office on Monday 1 August.

Per the contents, this is a proposed action to establish an unmanned aircraft system (UAS) at Key West or Mayport. Both proposed construction sites have been heavily modified since WWII. The Navy conducted archaeological survey of the proposed Mayport site and confirmed widespread disturbance. No cultural resources were identified in the course of survey. In similar regard, the proposed Key West site has been thoroughly reconfigured by development over the past 70 years. A recent inspection indicates that the property is unlikely to yield any archaeological resources. As with most Navy bases, such industrialized zones were first developed in the 1940s and have been thoroughly graded, filled, re-graded, and re-filled on too many subsequent occasions.

Given the outcome of archeological and architectural survey and general site inspections, the Navy has concluded that the UAS project warrants a finding of "No Historic Properties Affected." Suffice it to say, the Navy will consult with your tribe in the remote event that Native American artifacts or NAGPRA cultural items are identified.

I hope that you concur that our finding is sufficient. We look forward to your comments.

Thanks and have a great weekend,

Len

Len Winter
Historic Preservation Officer
NAVFAC SE/CNRSE
Box 30A/BLDG 903
NAS Jacksonville
Jacksonville, FL 32212
COMM: 904-542-6861

DEPARTMENT OF THE NAVY
COMMANDER NAVY REGION SOUTHEAST
BOX 102, NAVAL AIR STATION
JACKSONVILLE, FLORIDA 32212-0102

5090
Ser N45/
July 29, 2016

Dr. Paul N. Backhouse
Tribal Historic Preservation Officer
Seminole Tribe of Florida
30290 Josie Billie Highway
Clewiston, FL 33440

SUBJECT: EAST COAST HOME BASING OF MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM AT NAVAL AIR STATION KEY WEST AND NAVAL STATION MAYPORT, FLORIDA

This letter initiates consultation with your tribe pursuant to Section 106 of the National Historic Preservation Act (NHPA) regarding a proposed Department of the Navy (Navy) action to home base MQ-4C Triton Unmanned Aircraft Systems (UAS) on the east coast.

This letter addresses two proposed alternative locations identified by the Department of the Navy that are subject to your review as an interested party tribe. Alternative 1 would home base Triton UAS aircraft at Naval Air Station (NAS) Key West and Alternative 2 would home base these aircraft at Naval Station (NS) Mayport.

DESCRIPTION OF UNDERTAKING

The Proposed Action entails providing facilities and functions to operate and maintain the MQ-4C Triton UAS on the east coast. Under this Proposed Action, the Navy plans to establish a launch-and-recovery site for four home-based Triton UAS and support an operational-level facility hub for up to four additional aircraft undergoing maintenance. An average of five Triton UAS flight operations (take-offs or landings) are proposed per day at the selected location with an estimated total of 1,825 flights per year.

New construction and demolition of existing facilities and infrastructure at the selected site are planned to commence in 2017. Triton UAS assets would begin arriving in 2019, and steady-state operations would be achieved in the 2023 timeframe. In total, up to 400 personnel and approximately 500 family members are associated with the Proposed Action; gradually relocating to the selected area in phases from 2019 to 2023.

AREA OF POTENTIAL EFFECTS

Pursuant to Section 106 of the NHPA, the Navy identified and evaluated the proposed construction sites at Key West and Mayport and established the respective Area of Potential Effects (APE). The APE takes into account direct effects incurred at the proposed construction sites as well as viewshed and auditory effects. Acoustic studies at both alternative sites confirm that the introduction of 1,825 Triton UAS operations per year will not result in a perceptible change in noise levels above those already generated at the active airfields at each installation.

Alternative 1, NAS Key West: Approximately 21 acres at Boca Chica Airfield would be developed to support the home-basing action. This includes 16 acres of previously disturbed/developed lands, up to 2 acres of vegetation, and up to 3 acres of wetlands. Construction would occur within the airfield adjacent

to the runways (Enclosure 1). Two buildings (A1004 and A1005) would be demolished to establish a parking lot for UAS Triton personnel.

Alternative 2, NS Mayport: Approximately 25 acres at the existing airfield would be developed. This includes 10 acres of previously disturbed/developed lands and 15 acres of vegetated or forested areas. Construction would occur adjacent to the runway in an extant industrialized area (Enclosure 2). To support the proposed mission, an existing long-term recreational vehicle and boat storage lot would be relocated.

IDENTIFICATION OF HISTORIC PROPERTIES

Alternative 1, NAS Key West: There are no known archaeological resources within the APE and no traditional cultural properties or sacred sites have been identified at NAS Key West.

The project would entail the demolition of buildings A-1004 and A-1005. BLDG A-1004 is a small communications/receiver building constructed in 1946 (Enclosure 3). It was assessed by the U.S. Army Corps of Engineers in 1995 and found ineligible to the NRHP with SHPO concurrence under the four standard criteria for post-WWII and later Cold War significance under Criteria Consideration G. The building is currently unutilized and does not meet the requirements to sustain present or future military missions at the installation.

BLDG A-1005 is a small shredder/incinerator building also constructed in 1946 (Enclosure 4). The block-constructed building measures approximately 800-square-feet in area. The shredder/incinerator was removed long ago and the building has been abandoned for many years. The building does not meet the requirements to sustain present or future military missions at the installation. The building was surveyed by the Cultural Resources Manager at NAS Key West in conjunction with this project. BLDG A-1005 did not contribute significantly to events in the post-WWII/Cold War years; does not possess significant architectural/structural characteristics; and is herein recommended ineligible to the National Register of Historic Places.

Alternative 2, NS Mayport: There are no known archaeological resources within the APE and no traditional cultural properties or sacred sites have been identified at NS Mayport.

The St. Johns Lighthouse (Site 8DU296) is an NRHP-eligible structure located approximately 580 feet from the southern edge of proposed construction site. Sited near the boundary fence in the northwestern part of NS Mayport, the lighthouse is constructed of load-bearing masonry with a galvanized cast iron framework that supports the lantern and roof. The brick exterior walls are stuccoed and painted.

Under this alternative, construction would not incur any direct effects on the lighthouse; the viewshed would not be affected given the presence of other extant constructions in the vicinity of the project site; and the 1-decibel increase in noise levels associated with UAS flights would not incur acoustic effects that could damage the structure.

Surface inspection of the proposed construction site was conducted on December 17, 2015. Archaeologists observed evidence of significant disturbance on undeveloped portions of land throughout the APE associated with original runway construction and ongoing runway/grounds maintenance over the past 70 years. Given observed site conditions and a review of historical U.S. Geological Survey maps, the Navy concluded that there is a low probability that intact archeological resources will be identified in the course of the Triton UAS project.

Under both alternatives, the inadvertent discovery of prehistoric archaeological resources would prompt the immediate suspension of work and consultation with the SHPO and your tribe to determine the manner in which the resources would be evaluated and treated. Moreover, the discovery of NAGPRA "cultural items" will prompt immediate consultation with your tribe pursuant to the requirements found at 43 CFR 10.4.

REQUEST FOR CONCURRENCE

The Navy has determined that the proposed action alternatives at NAS Key West and NS Mayport do not threaten to affect significant cultural resources that may be esteemed by your tribe. We have concluded that the project warrants a finding of "No Historic Properties Affected" and seek concurrence from your tribe.

If you have any questions or need additional information, contact Mr. Len Winter, NAVFAC SE/NRSE Historic Preservation Officer at commercial (904) 542-6861 or email: len.winter@navy.mil. Formal correspondence can be directed to:

NAVFAC SE
Attn: Mr. Len Winter, HPO (Code EV23)
PO Box 30A, Bldg 903, NAS
Jacksonville, FL 32212-0030

Thank you for supporting the Navy mission in Florida.

Sincerely,

C. R. DESTAFNEY, PE
Regional Environmental Director
By direction
of the Commander

Enclosures: 1. NAS Key West, Alternative 1
2. NS Mayport, Alternative 2
3. NAS Key West, BLDG A-1004
4. NAS Key West, BLDG A-1005

Copy to:
Mr. Len Winter, HPO, NAVFAC SE
Mr. Eddie Barham, IEPD, NAS Key West
Ms. Trish Loop, IEPD, NS Mayport

NAS Key West (Alternative One)

Legend

- Sanitary Sewer
- Airfield Clearance
- New Taxi Lane Centerline
- Hangar (Type IV)
- New Hangar Bay
- New Taxi Lane and New Parking Apron
- Existing Building
- Special Status Species Habitat
- Wetland

NAVFAC

0 2 4 8 12 16 Miles

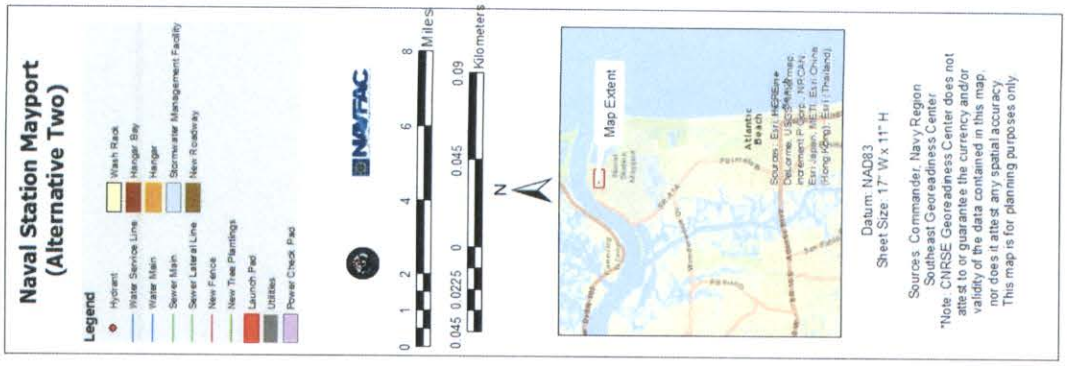
5 2.5 0 5 10 15 20 Kilometers

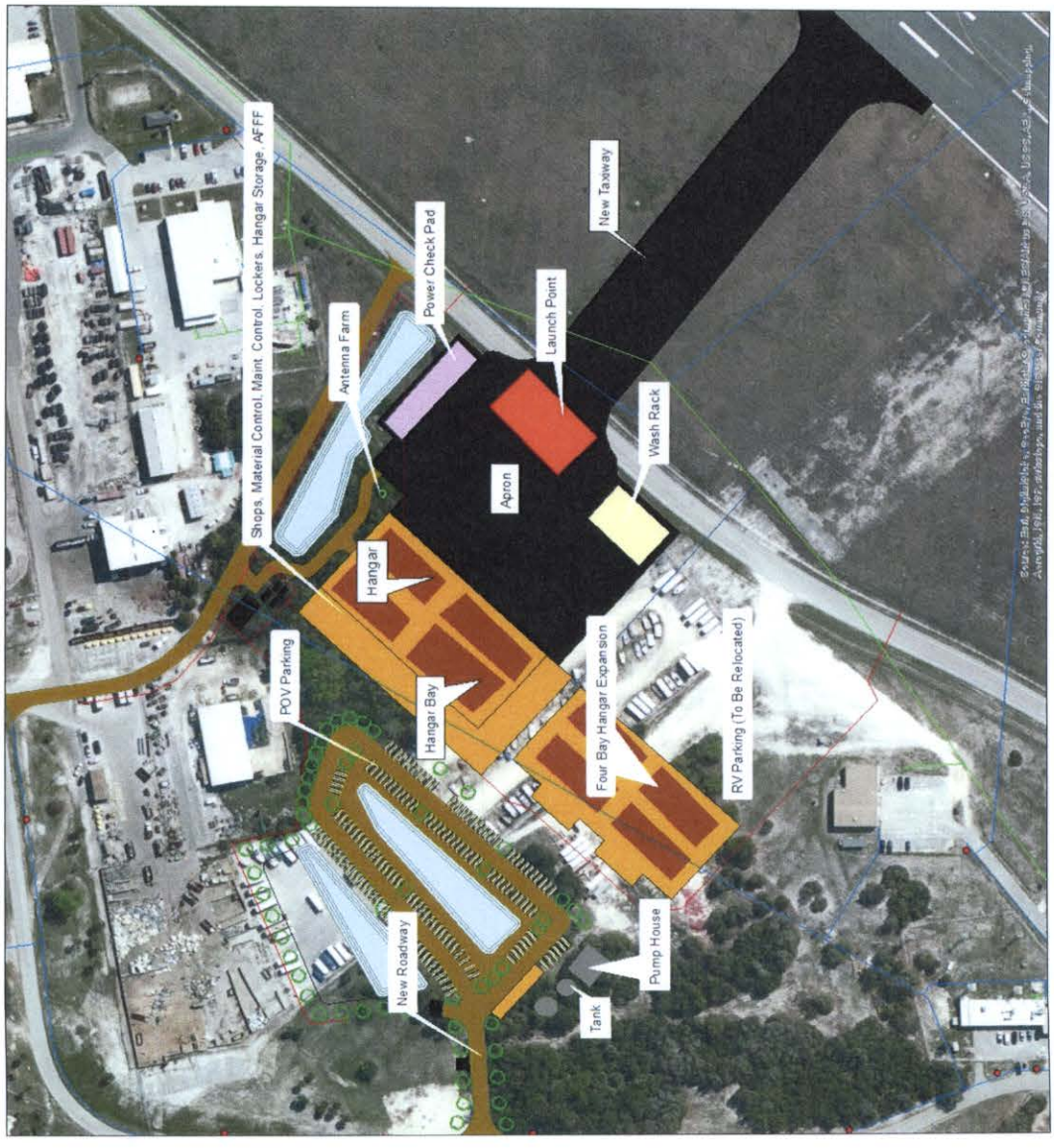
N

Datum: NAD83
Sheet Size: 17" W x 11" H

Sources: Commander, Navy Region Southeast Georeadiness Center
"Note: CNRSE Georeadiness Center does not attest to or guarantee the currency and/or validity of the data contained in this map, nor does it attest any spatial accuracy. This map is for planning purposes only.

Enclosure 1. Naval Air Station Key West (Alternative 1)





Enclosure 2. Naval Station Mayport (Alternative 2)

Enclosure 3. Naval Air Station Key West, Building A-1004

Enclosure 4. Naval Air Station Key West, Building A-1005

Butts, Jeffery CIV NAVFAC LANT, EV

From: Winter, Len E CIV NAVFAC SE, JAXS <len.winter@navy.mil>
Sent: Monday, August 01, 2016 10:09
To: Durig, Brock CIV NAVFAC SE, EV
Subject: FW: Triton UAS Project: NAS Key West and NS Mayport
Attachments: 5090 Ser N45 xxx L Winter TRITON STOF BILLIE CONSULT 28 JULY 2016.pdf
Signed By: len.winter@navy.mil

-----Original Message-----
From: Winter, Len E CIV NAVFAC SE, JAXS
Sent: Friday, July 29, 2016 12:28 PM
To: 'jamesbillie@semtribe.com'
Subject: Triton UAS Project: NAS Key West and NS Mayport

Dear Chairman Billie:

I am forwarding you this e-copy of a Section 106 consultation letter that will hopefully leave here today via FEDEX for delivery to your office on Monday 1 August. I have also emailed THPO Backhouse in re this matter.

Per the contents, this is a proposed action to establish an unmanned aircraft system (UAS) at Key West or Mayport. Both proposed construction sites have been heavily modified since WWII. The Navy conducted archaeological survey of the proposed Mayport site and confirmed widespread disturbance. No cultural resources were identified in the course of survey. In similar regard, the proposed Key West site has been thoroughly reconfigured by development over the past 70 years. A recent inspection indicates that the property is unlikely to yield any archaeological resources. As with most Navy bases, such industrialized zones were first developed in the 1940s and have been thoroughly graded, filled, re-graded, and re-filled on too many subsequent occasions.

Given the outcome of archeological and architectural survey and general site inspections, the Navy has concluded that the UAS project warrants a finding of "No Historic Properties Affected." Suffice it to say, the Navy will consult with your tribe in the remote event that Native American artifacts or NAGPRA cultural items are identified.

I hope that you concur that our finding is sufficient. We look forward to your comments.

Thanks,

Len

Len Winter
Historic Preservation Officer
NAVFAC SE/CNRSE
Box 30A/BLDG 903
NAS Jacksonville
Jacksonville, FL 32212
COMM: 904-542-6861

DEPARTMENT OF THE NAVY
COMMANDER NAVY REGION SOUTHEAST
BOX 102, NAVAL AIR STATION
JACKSONVILLE, FLORIDA 32212-0102

5090
Ser N45/
July 29, 2016

Mr. James E. Billie
Chairman
Seminole Tribe of Florida
6300 Stirling Road
Hollywood, FL 33024

SUBJECT: EAST COAST HOME BASING OF MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM AT NAVAL AIR STATION KEY WEST AND NAVAL STATION MAYPORT, FLORIDA

This letter initiates consultation with your tribe pursuant to Section 106 of the National Historic Preservation Act (NHPA) regarding a proposed Department of the Navy (Navy) action to home base MQ-4C Triton Unmanned Aircraft Systems (UAS) on the east coast.

This letter addresses two proposed alternative locations identified by the Department of the Navy that are subject to your review as an interested party tribe. Alternative 1 would home base Triton UAS aircraft at Naval Air Station (NAS) Key West and Alternative 2 would home base these aircraft at Naval Station (NS) Mayport.

DESCRIPTION OF UNDERTAKING

The Proposed Action entails providing facilities and functions to operate and maintain the MQ-4C Triton UAS on the east coast. Under this Proposed Action, the Navy plans to establish a launch-and-recovery site for four home-based Triton UAS and support an operational-level facility hub for up to four additional aircraft undergoing maintenance. An average of five Triton UAS flight operations (take-offs or landings) are proposed per day at the selected location with an estimated total of 1,825 flights per year.

New construction and demolition of existing facilities and infrastructure at the selected site are planned to commence in 2017. Triton UAS assets would begin arriving in 2019, and steady-state operations would be achieved in the 2023 timeframe. In total, up to 400 personnel and approximately 500 family members are associated with the Proposed Action; gradually relocating to the selected area in phases from 2019 to 2023.

AREA OF POTENTIAL EFFECTS

Pursuant to Section 106 of the NHPA, the Navy identified and evaluated the proposed construction sites at Key West and Mayport and established the respective Area of Potential Effects (APE). The APE takes into account direct effects incurred at the proposed construction sites as well as viewshed and auditory effects. Acoustic studies at both alternative sites confirm that the introduction of 1,825 Triton UAS operations per year will not result in a perceptible change in noise levels above those already generated at the active airfields at each installation.

Alternative 1, NAS Key West: Approximately 21 acres at Boca Chica Airfield would be developed to support the home-basing action. This includes 16 acres of previously disturbed/developed lands, up to 2 acres of vegetation, and up to 3 acres of wetlands. Construction would occur within the airfield adjacent

to the runways (Enclosure 1). Two buildings (A1004 and A1005) would be demolished to establish a parking lot for UAS Triton personnel.

Alternative 2, NS Mayport: Approximately 25 acres at the existing airfield would be developed. This includes 10 acres of previously disturbed/developed lands and 15 acres of vegetated or forested areas. Construction would occur adjacent to the runway in an extant industrialized area (Enclosure 2). To support the proposed mission, an existing long-term recreational vehicle and boat storage lot would be relocated.

IDENTIFICATION OF HISTORIC PROPERTIES

Alternative 1, NAS Key West: There are no known archaeological resources within the APE and no traditional cultural properties or sacred sites have been identified at NAS Key West.

The project would entail the demolition of buildings A-1004 and A-1005. BLDG A-1004 is a small communications/receiver building constructed in 1946 (Enclosure 3). It was assessed by the U.S. Army Corps of Engineers in 1995 and found ineligible to the NRHP with SHPO concurrence under the four standard criteria for post-WWII and later Cold War significance under Criteria Consideration G. The building is currently unutilized and does not meet the requirements to sustain present or future military missions at the installation.

BLDG A-1005 is a small shredder/incinerator building also constructed in 1946 (Enclosure 4). The block-constructed building measures approximately 800-square-feet in area. The shredder/incinerator was removed long ago and the building has been abandoned for many years. The building does not meet the requirements to sustain present or future military missions at the installation. The building was surveyed by the Cultural Resources Manager at NAS Key West in conjunction with this project. BLDG A-1005 did not contribute significantly to events in the post-WWII/Cold War years; does not possess significant architectural/structural characteristics; and is herein recommended ineligible to the National Register of Historic Places.

Alternative 2, NS Mayport: There are no known archaeological resources within the APE and no traditional cultural properties or sacred sites have been identified at NS Mayport.

The St. Johns Lighthouse (Site 8DU296) is an NRHP-eligible structure located approximately 580 feet from the southern edge of proposed construction site. Sited near the boundary fence in the northwestern part of NS Mayport, the lighthouse is constructed of load-bearing masonry with a galvanized cast iron framework that supports the lantern and roof. The brick exterior walls are stuccoed and painted.

Under this alternative, construction would not incur any direct effects on the lighthouse; the viewshed would not be affected given the presence of other extant constructions in the vicinity of the project site; and the 1-decibel increase in noise levels associated with UAS flights would not incur acoustic effects that could damage the structure.

Surface inspection of the proposed construction site was conducted on December 17, 2015. Archaeologists observed evidence of significant disturbance on undeveloped portions of land throughout the APE associated with original runway construction and ongoing runway/grounds maintenance over the past 70 years. Given observed site conditions and a review of historical U.S. Geological Survey maps, the Navy concluded that there is a low probability that intact archeological resources will be identified in the course of the Triton UAS project.

Under both alternatives, the inadvertent discovery of prehistoric archaeological resources would prompt the immediate suspension of work and consultation with the SHPO and your tribe to determine the manner in which the resources would be evaluated and treated. Moreover, the discovery of NAGPRA "cultural items" will prompt immediate consultation with your tribe pursuant to the requirements found at 43 CFR 10.4.

REQUEST FOR CONCURRENCE

The Navy has determined that the proposed action alternatives at NAS Key West and NS Mayport do not threaten to affect significant cultural resources that may be esteemed by your tribe. We have concluded that the project warrants a finding of "No Historic Properties Affected" and seek concurrence from your tribe.

If you have any questions or need additional information, contact Mr. Len Winter, NAVFAC SE/NRSE Historic Preservation Officer at commercial (904) 542-6861 or email: len.winter@navy.mil. Formal correspondence can be directed to:

NAVFAC SE
Attn: Mr. Len Winter, HPO (Code EV23)
PO Box 30A, Bldg 903, NAS
Jacksonville, FL 32212-0030

Thank you for supporting the Navy mission in Florida.

Sincerely,

C. R. DESTAFNEY, PE
Regional Environmental Director
By direction
of the Commander

Enclosures: 1. NAS Key West, Alternative 1
2. NS Mayport, Alternative 2
3. NAS Key West, BLDG A-1004
4. NAS Key West, BLDG A-1005

Copy to:
Mr. Len Winter, HPO, NAVFAC SE
Mr. Eddie Barham, IEPD, NAS Key West
Ms. Trish Loop, IEPD, NS Mayport

NAS Key West (Alternative One)

Legend

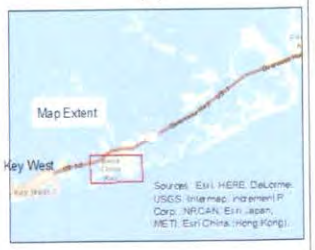
- Sanitary Sewer
- Airfield Clearance
- New Taxi Lane Centerline
- Hangar (Type IV)
- New Hangar Bay
- New Taxi Lane and New Parking Apron
- Existing Building
- Special Status Species Habitat
- Wetland

NAVFAC

0 2 4 8 12 16 Miles

5 2.5 0 5 10 15 20 Kilometers

N



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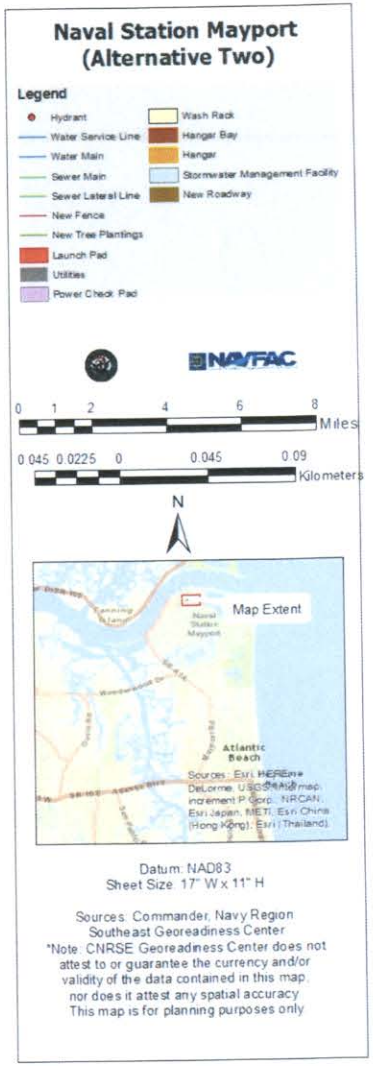
Sheet Size: 17" W x 11" H

Sources: Commander, Navy Region Southeast Georeadiness Center
*Note: CNRSE Georeadiness Center does not attest to or guarantee the currency and/or validity of the data contained in this map, nor does it attest any spatial accuracy. This map is for planning purposes only.

Enclosure 1. Naval Air Station Key West (Alternative 1)



Enclosure 2. Naval Station Mayport (Alternative 2)

Enclosure 3. Naval Air Station Key West, Building A-1004

Enclosure 4. Naval Air Station Key West, Building A-1005

Butts, Jeffery CIV NAVFAC LANT, EV

From: Winter, Len E CIV NAVFAC SE, JAXS <len.winter@navy.mil>
Sent: Monday, August 01, 2016 10:09
To: Durig, Brock CIV NAVFAC SE, EV
Subject: FW: Triton UAS Project: NAS Key West and NS Mayport
Attachments: 5090 Ser N45 xxx L Winter TRITON SNOO NAT HARJO CONSULT 28 JULY 2016.pdf
Signed By: len.winter@navy.mil

-----Original Message-----
From: Winter, Len E CIV NAVFAC SE, JAXS
Sent: Friday, July 29, 2016 12:22 PM
To: 'harjo.n@sno-nsn.gov'
Subject: Triton UAS Project: NAS Key West and NS Mayport

Dear THPO Harjo:

I am forwarding you this e-copy of a Section 106 consultation letter that will hopefully leave here today via FEDEX for delivery to your office on Monday 1 August.

Per the contents, this is a proposed action to establish an unmanned aircraft system (UAS) at Key West or Mayport. Both proposed construction sites have been heavily modified since WWII. The Navy conducted archaeological survey of the proposed Mayport site and confirmed widespread disturbance. No cultural resources were identified in the course of survey. In similar regard, the proposed Key West site has been thoroughly reconfigured by development over the past 70 years. A recent inspection indicates that the property is unlikely to yield any archaeological resources. As with most Navy bases, such industrialized zones were first developed in the 1940s and have been thoroughly graded, filled, re-graded, and re-filled on too many subsequent occasions.

Given the outcome of archeological and architectural survey and general site inspections, the Navy has concluded that the UAS project warrants a finding of "No Historic Properties Affected." Suffice it to say, the Navy will consult with your tribe in the remote event that Native American artifacts or NAGPRA cultural items are identified.

I hope that you concur that our finding is sufficient. We look forward to your comments.

Thanks,

Len

Len Winter
Historic Preservation Officer
NAVFAC SE/CNRSE
Box 30A/BLDG 903
NAS Jacksonville
Jacksonville, FL 32212
COMM: 904-542-6861

DEPARTMENT OF THE NAVY
COMMANDER NAVY REGION SOUTHEAST
BOX 102, NAVAL AIR STATION
JACKSONVILLE, FLORIDA 32212-0102

5090
Ser N45/
July 29, 2016

Ms. Natalie Harjo
Tribal Historic Preservation Officer
The Seminole Nation of Oklahoma
P.O. Box 1498
Wewoka, OK 74868

SUBJECT: EAST COAST HOME BASING OF MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM AT NAVAL AIR STATION KEY WEST AND NAVAL STATION MAYPORT, FLORIDA

This letter initiates consultation with your tribe pursuant to Section 106 of the National Historic Preservation Act (NHPA) regarding a proposed Department of the Navy (Navy) action to home base MQ-4C Triton Unmanned Aircraft Systems (UAS) on the east coast.

This letter addresses two proposed alternative locations identified by the Department of the Navy that are subject to your review as an interested party tribe. Alternative 1 would home base Triton UAS aircraft at Naval Air Station (NAS) Key West and Alternative 2 would home base these aircraft at Naval Station (NS) Mayport.

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The Navy has determined that the proposed action alternatives at NAS Key West and NS Mayport do not threaten to affect significant cultural resources that may be esteemed by your tribe. We have concluded that the project warrants a finding of "No Historic Properties Affected" and seek concurrence from your tribe.

If you have any questions or need additional information, contact Mr. Len Winter, NAVFAC SE/NRSE Historic Preservation Officer at commercial (904) 542-6861 or email: len.winter@navy.mil. Formal correspondence can be directed to:

NAVFAC SE
Attn: Mr. Len Winter, HPO (Code EV23)
PO Box 30A, Bldg 903, NAS
Jacksonville, FL 32212-0030

Thank you for supporting the Navy mission in Florida.

Sincerely,

C. R. DESTAFNEY, PE
Regional Environmental Director
By direction
of the Commander

Enclosures: 1. NAS Key West, Alternative 1
2. NS Mayport, Alternative 2
3. NAS Key West, BLDG A-1004
4. NAS Key West, BLDG A-1005

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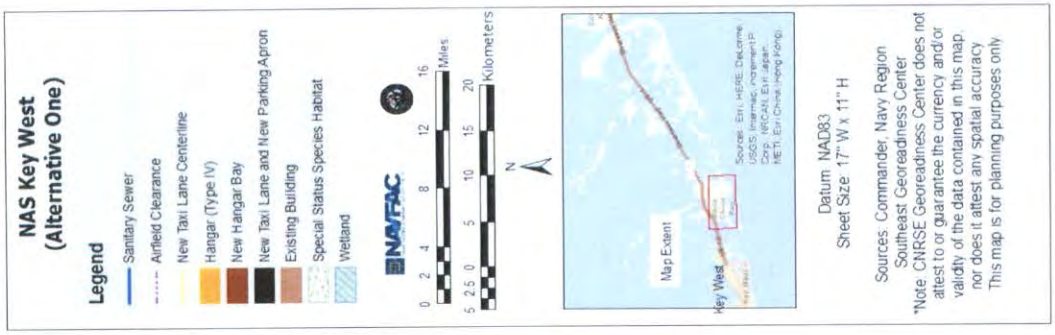
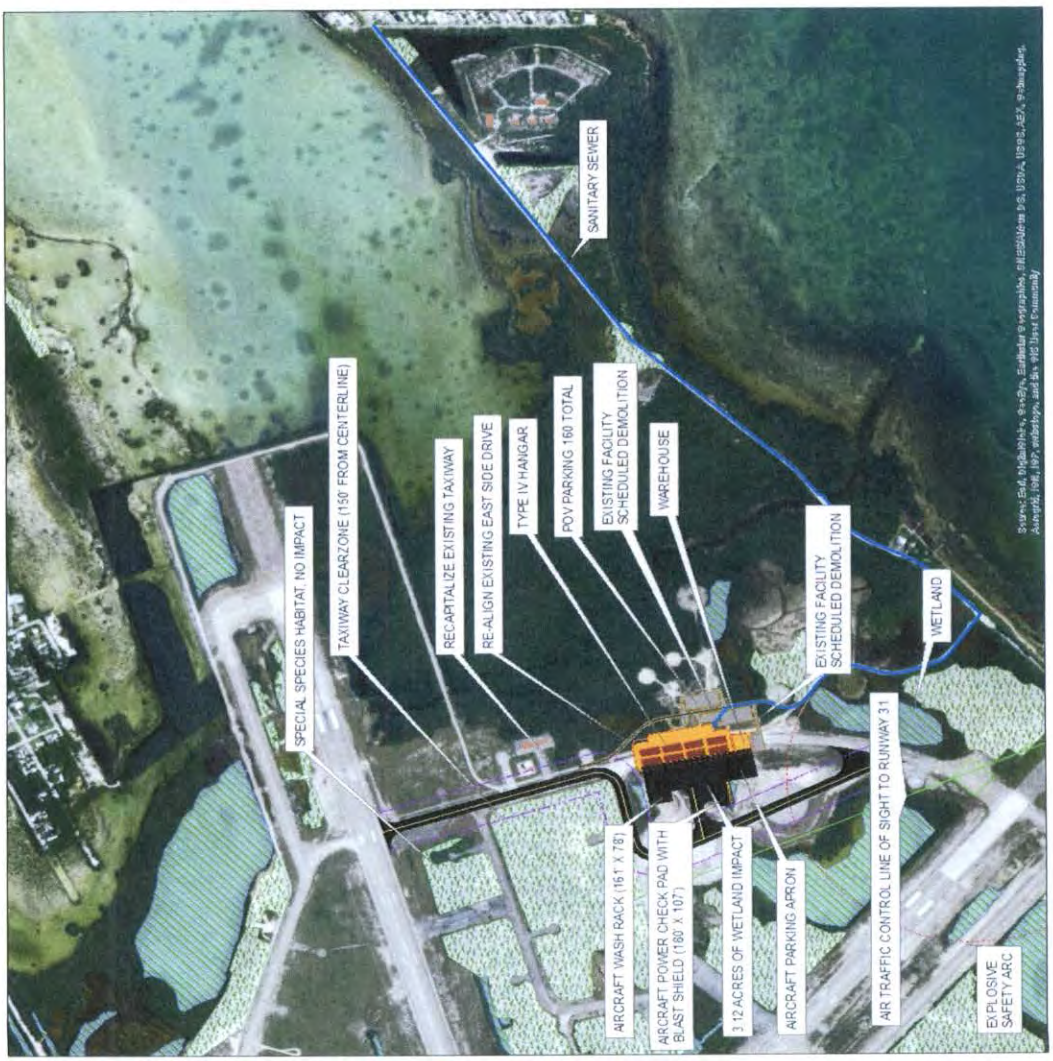
Mr. Len Winter, HPO, NAVFAC SE
Mr. Eddie Barham, IEPD, NAS Key West
Ms. Trish Loop, IEPD, NS Mayport





Enclosure 1. Naval Air Station Key West (Alternative 1)

Naval Station Mayport (Alternative Two)

Legend

- Hydrant
- Water Service Line
- Water Main
- Sewer Main
- Sewer Lateral Line
- New Fence
- New Tree Plantings
- Launch Pad
- Utilities
- Power Check Pad
- Wash Rack
- Hangar Bay
- Hangar
- Stormwater Management Facility
- New Roadway

NAVFAC

0 1 2 4 6 8 Miles

0.045 0.0225 0 0.045 0.09 Kilometers

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Datum: NAD83
Sheet Size: 17" W x 11" H

Sources: Commander, Navy Region Southeast Georeadiness Center
*Note: CNRSE Georeadiness Center does not attest to or guarantee the currency and/or validity of the data contained in this map, nor does it attest any spatial accuracy. This map is for planning purposes only

Enclosure 2. Naval Station Mayport (Alternative 2)

Enclosure 3. Naval Air Station Key West, Building A-1004

Enclosure 4. Naval Air Station Key West, Building A-1005

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK VA 23508-1278

IN REPLY REFER TO:
5090
Ser EV54DC/00295
14 JUL 2010

Julie Langan, Director
ATTN: Marc Holma
Division of Review and Compliance
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Dear Ms. Langan:

This letter initiates interagency coordination with your office regarding a proposed Department of the Navy (U.S. Navy) action to home base MQ-4C Triton Unmanned Aircraft Systems (Triton UAS) on the East Coast. This letter addresses one of three alternative locations identified in the Environmental Assessment (EA). Alternative 1 would home base Triton UAS aircraft at Naval Air Station (NAS) Key West and Alternative 2 would home base these aircraft at Naval Station (NS) Mayport; both installations are located in Florida. Under the third alternative, Triton UAS aircraft would be home based at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility (WFF) in Virginia (Figure 1).

1. DESCRIPTION OF UNDERTAKING.

Under the Proposed Action analyzed in the aforementioned EA, the Navy would home base four Triton UAS aircraft and support a maintenance hub for up to four additional Triton UAS. An average of five Triton UAS flight operations (take-offs or landings) per day (1,825 annually) would occur. Depending on the option, new construction and/or demolition of existing facilities and infrastructure would be implemented. Construction and/or demolition activities would begin in 2017, Triton UAS assets would begin arriving in 2019, and steady state operations would be achieved in the 2023 timeframe. In total, up to 400 personnel and approximately 500 family members are associated with the Proposed Action. Personnel and their family members would gradually relocate to the surrounding area in phases, from 2019 to 2023.

2. AREA OF POTENTIAL EFFECTS (APE).

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), the Navy identified and evaluated the APE, which encompasses the area where construction would occur. Introduction of 1,825 annual Triton UAS operations would not perceptibly change the noise levels already generated at the active airfield. Under the Proposed Action there would be a less than 1-decibel increase in average noise levels (*Note*: a 3-decibel change is barely detectible by the human ear). Under Alternative 3, WFF, approximately 10 acres at the WFF Main Base airfield would be developed to support the home basing action, of which about 5 acres are already developed (Figure 2). Construction would occur within the airfield environment and adjacent to runway 10/28.

3. IDENTIFICATION OF HISTORIC PROPERTIES.

NASA WFF in consultation with the SHPO has conducted an assessment-level investigation of the entire WFF titled, "Cultural Resources Assessment of NASA Wallops Flight Facility, Accomack County, Virginia" (URS/EG&G, 2003); and two reconnaissance-level architectural surveys of buildings, structures, and districts built before 1955 and between 1956 and 1965, respectively titled, "Historic Resources and Eligibility Report for Wallops Flight Facility, Accomack County, Virginia" (URS/EG&G, 2004); and "Historic Resources and Eligibility Survey for Wallops Flight Facility" (TEC, Inc. 2011).

Based upon the aforementioned identification and evaluation surveys, there are no known archaeological or architectural resources within the APE. However, in the event that intact subsurface cultural resources are inadvertently discovered during construction or demolition activities, work would cease immediately, the cultural resources would be evaluated for NRHP eligibility, and consultation would continue per 36 CFR parts 800.4 to 800.6. The WFF Historic Preservation Officer would follow the procedures outlined in the Integrated Cultural Resources Management Plan (August 2015) as well as Stipulations VII, VIII, XI, XII, and XIII of the "Programmatic Agreement among the National Aeronautics and Space Administration, the Virginia State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Management of Archaeological Resources at the Wallops Flight Facility, Wallops Island, Accomack County, Virginia" (17 December 2014).

While traditional cultural properties have not been recognized to date, pursuant to NASA's Programmatic Agreement, the Navy and NASA will notify the Pocomoke and Catawba Indian Nations about the Proposed Action and alternative.

4. DETERMINATION OF EFFECT.

The Navy and NASA have determined that the undertaking will have no effect on historic architectural or archaeological resources, as the APE does not contain NRHP-listed or eligible properties. Additionally, this undertaking meets the criteria for undertakings not requiring additional review under the Programmatic Agreement, as described in Appendix G, "Activities That Have Limited Potential to Effect Historic Resources." In accordance with Section 106, the Navy and NASA invite you to concur with the effect determination for this undertaking, within 30 days after receipt.

If you have any questions or need additional information, contact Darrell Cook, Architectural Historian at (757) 322-4282 or by e-mail: darrell.e.cook@navy.mil.

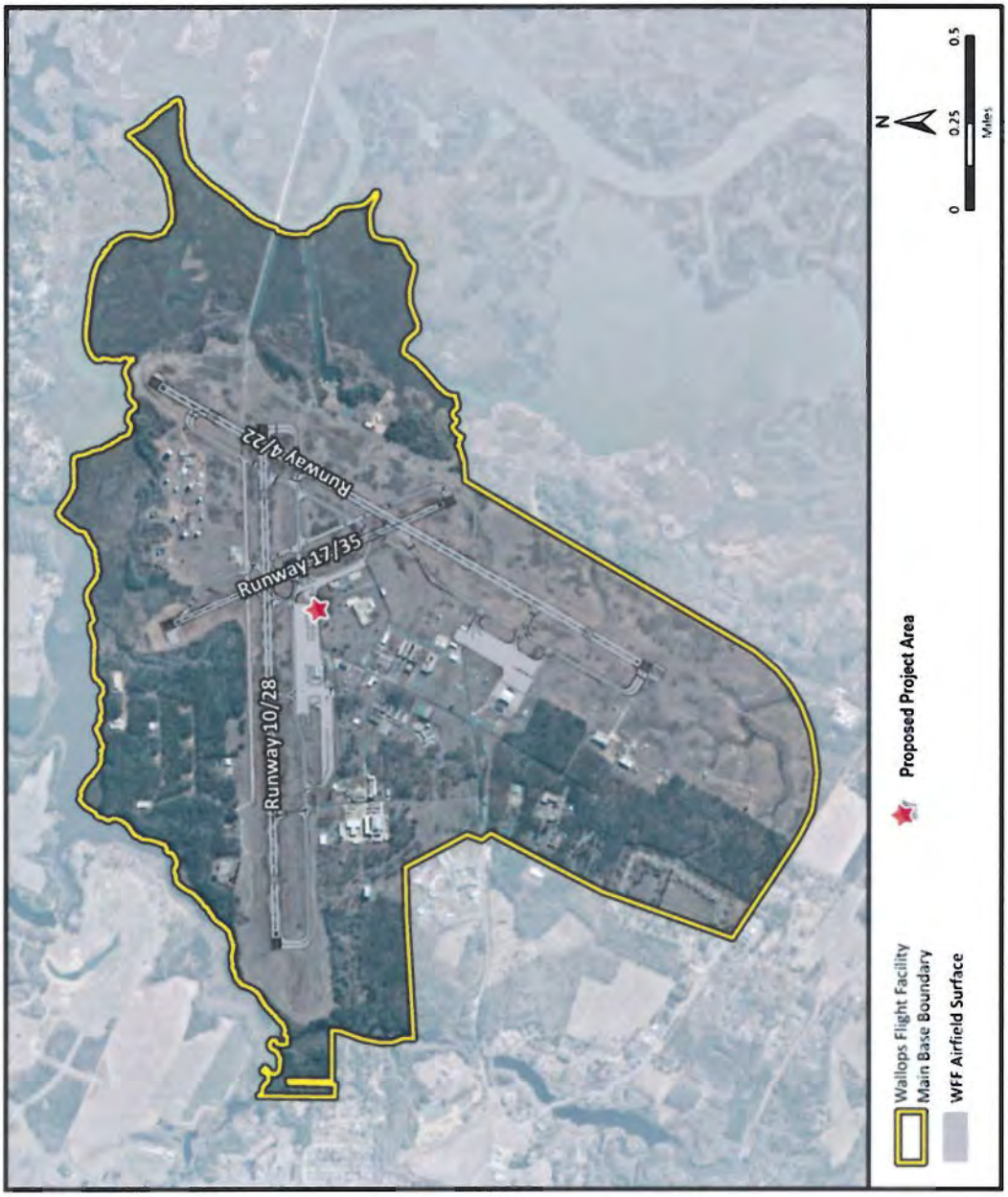
Sincerely,

J. R. CIRVELLO, P.E.
Environmental Business Line Manager
By direction of the Commander

Enclosures: 1. Figure 1 - Alternative 3, Wallops Flight Facility and Proposed Project Area
2. Figure 2 - Alternative 3, Wallops Flight Facility Construction Features

5090
Ser EV54DC/00295
14 JUL 2015

Copy to:
NASA WFF Historic Preservation Officer, Randall Stanley
Catawba Indian Nation, Dr. Caitlin Totherow, THPO
Pocomoke Indian Nation, Mr. Norris Howard, Paramount Chief



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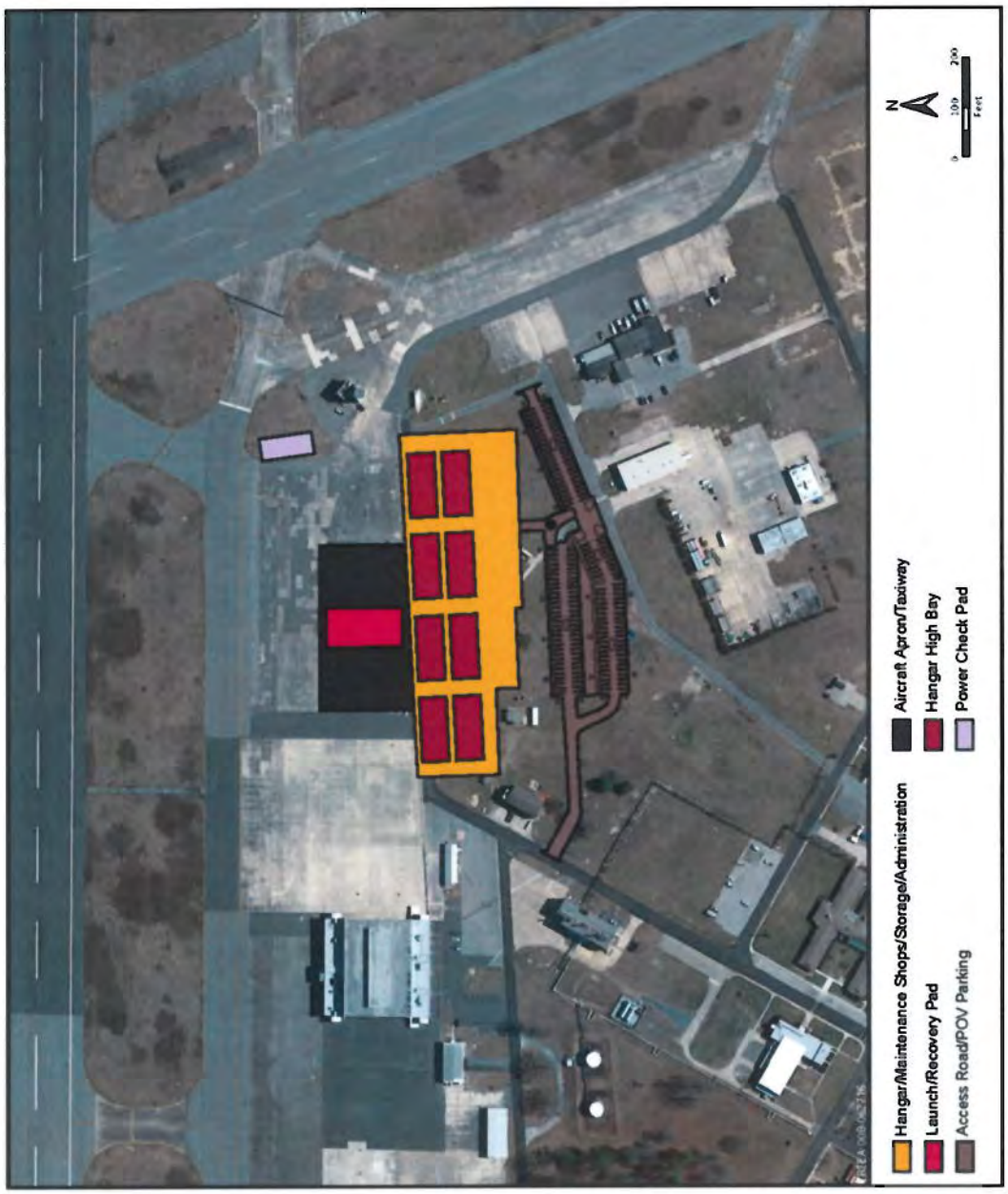

Figure 2 - Alternative 3, Wallops Flight Facility – Proposed Project Area Construction Features

STATE HISTORIC PRESERVATION OFFICES

DEPARTMENT OF THE NAVY
COMMANDER NAVY REGION SOUTHEAST
BOX 102, NAVAL AIR STATION
JACKSONVILLE, FLORIDA 32212-0102

5090
Ser N45/400
June 30, 2016

Mr. Timothy A. Parsons, Ph.D., RPA
Division Director and State Historic Preservation Officer
500 S. Bronough Street
Tallahassee, FL 32399

SUBJECT: EAST COAST HOME BASING OF MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM AT NAVAL AIR STATION KEY WEST AND NAVAL STATION MAYPORT, FLORIDA

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Alternative 2, NS Mayport: There are no known archaeological resources within the APE and no traditional cultural properties or sacred sites have been identified at NS Mayport.

The St. Johns Lighthouse (Site 8DU296) is an NRHP-eligible structure located approximately 580 feet from the southern edge of proposed construction site. Sited near the boundary fence in the northwestern part of NS Mayport, the lighthouse is constructed of load-bearing masonry with a galvanized cast iron framework that supports the lantern and roof. The brick exterior walls are stuccoed and painted.

Under this alternative, construction would not incur any direct effects on the lighthouse; the viewshed would not be affected given the presence of other extant constructions in the vicinity of the project site; and the 1-decibel increase in noise levels associated with UAS flights would not incur acoustic effects that could damage the structure.

Surface inspection of the proposed construction site was conducted on December 17, 2015. Archaeologists observed evidence of significant disturbance on undeveloped portions of land throughout the APE associated with original runway construction and ongoing runway/grounds maintenance over the past 70 years. Given observed site conditions and a review of historical U.S. Geological Survey maps, the Navy concluded that there is a low probability that intact archeological resources will be identified in the course of the Triton UAS project.

Under both alternatives, the inadvertent discovery of archaeological resources would prompt the immediate suspension of work and consultation with your office to determine the manner in which the resources would be evaluated and treated.

In keeping with its historic preservation responsibilities, the Navy has notified the Seminole Tribe of Florida (STOF) about the proposed action at NAS Key West and NS Mayport and has consulted the Miccosukee Tribe of Indians and the Seminole Nation of Oklahoma about the proposed action at NS Mayport. To date, no tribe has contacted the Navy in regard to the proposed action. The Navy will take into consideration any questions or comments from these consulting parties if they elect to consult in the matter of the Triton UAS project.

REQUEST FOR CONCURRENCE

The Navy has determined that the proposed action alternatives at NAS Key West and NS Mayport warrant a finding of "No Historic Properties Affected."

If you have any questions or need additional information, contact Mr. Len Winter, NAVFAC SE/NRSE Historic Preservation Officer at commercial (904) 542-6861 or email: len.winter@navy.mil. Formal correspondence can be directed to:

Commanding Officer
NAVFAC SE
Attn: Mr. Len Winter, HPO (Code EV23)
PO Box 30A, Bldg 903, NAS
Jacksonville, FL 32212-0030

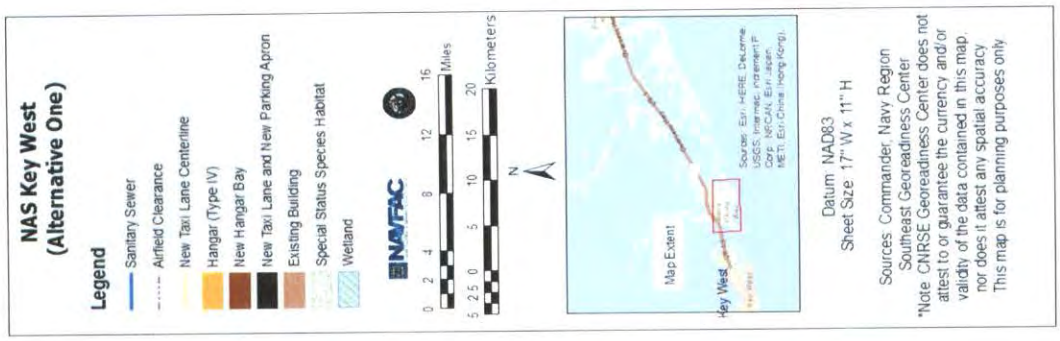
Thank you for supporting the Navy mission in Florida.

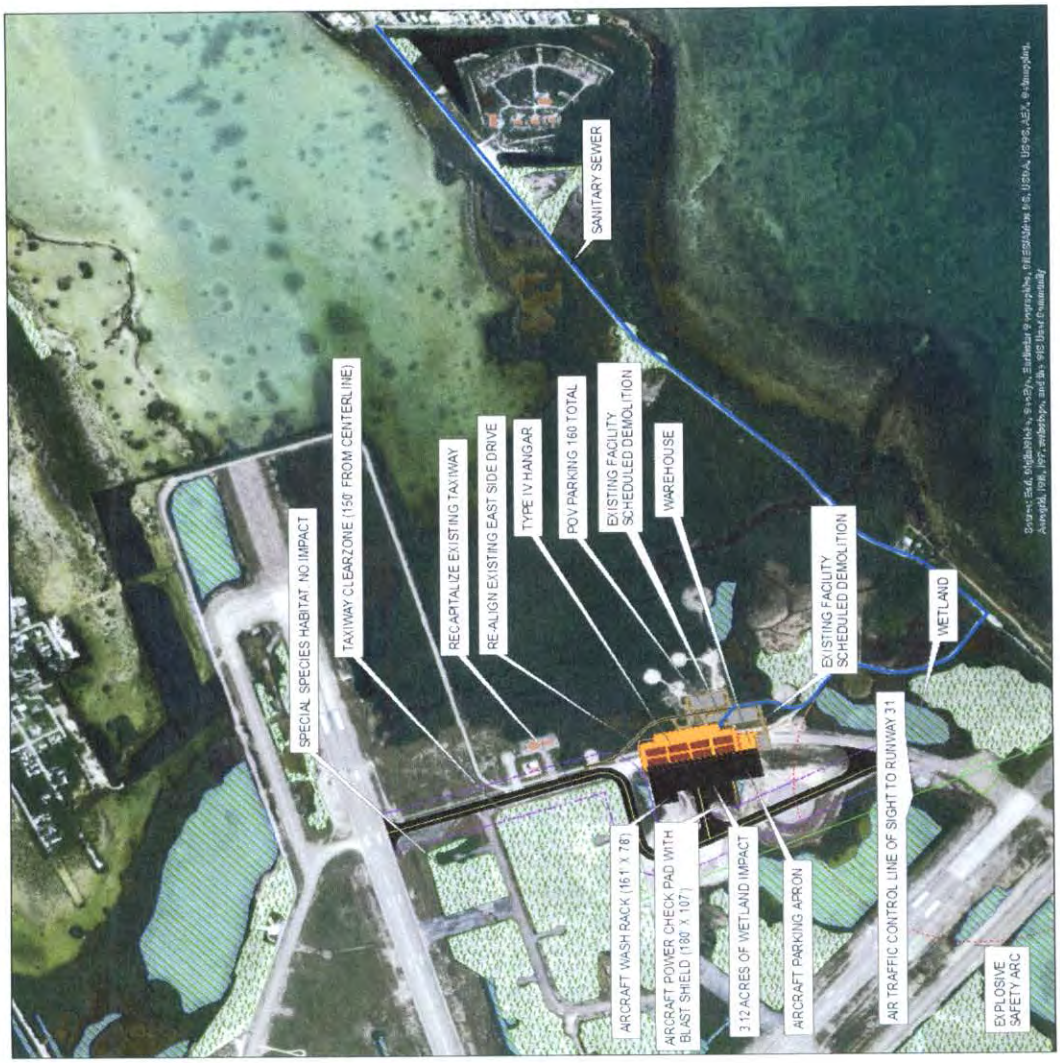
Sincerely,

C. R. DESTAFNEY, PE
Region Environmental Director
By direction
of the Commander

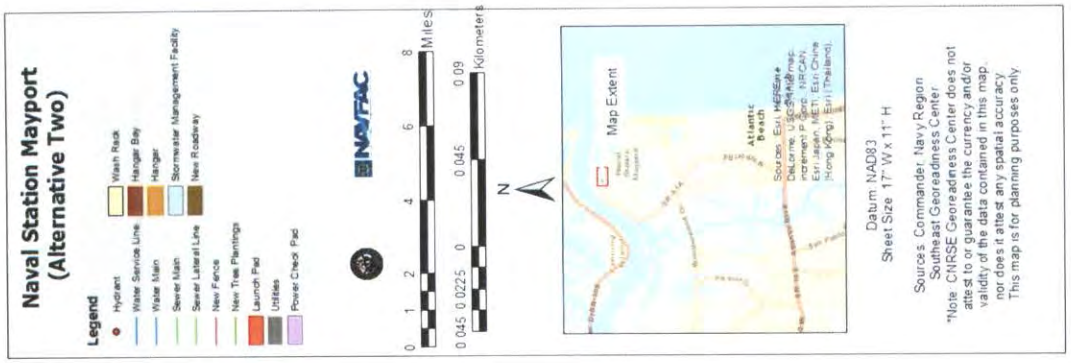
Enclosures: 1. NAS Key West, Alternative 1
2. NS Mayport, Alternative 2
3. NAS Key West, BLDG A-1004
4. NAS Key West, BLDG A-1005

Copy to:
Mr. Len Winter, HPO, NAVFAC SE
Mr. Eddie Barham, IEPD, NAS Key West
Ms. Trish Loop, IEPD, NS Mayport





Enclosure 1. Naval Air Station Key West (Alternative 1)



Enclosure 2. Naval Station Mayport (Alternative 2)

Enclosure 3. Naval Air Station Key West, Building A-1004

Enclosure 4. Naval Air Station Key West, Building A-1005

FLORIDA DEPARTMENT *of* STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Commanding Officer
NAVFAC SE
Attn: Mr. Len Winter, HPO (Code EV23)
PO Box 30A, Bldg 903, NAS
Jacksonville, Florida 32212-0030

August 5, 2016

Re: DHR Project File No.: 2016-2906; Received by DHR: July 7, 2016
East Coast Home Basing of MQ-4C Triton Unmanned Aircraft System at Naval Air Station Key West and Naval Station Mayport, Florida

Dear Mr. Winter:

The Florida State Historic Preservation Officer reviewed the referenced project for possible effects on historic properties listed, or eligible for listing, on the *National Register of Historic Places* (NRHP). The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended, and its implementing regulations in *36 CFR Part 800: Protection of Historic Properties.*

Thank you for providing our office with the opportunity to comment on the proposed MQ-4C Triton Unmanned Aircraft System (UAS)on the east coast. Given that this project has two proposed locations, our office will address our comments for each alternative.

Alternative 1: With regard to the archaeology, our office agrees that the area has a low potential to contain intact archaeological deposits. However, historic structures are present with the APE. Your letter indicated that the previously recorded historic structure (Building A-1004) was determined ineligible for listing on the NRHP, and Building A-1005 is not NR-eligible. Unfortunately, the Florida Master Site File (FMSF) does not reflect the determination of NR-eligibility for Building A-1004 and has no record for Building A-1005. For Building A-1004, please provide an updated FMSF historic structure form and provide a copy of SHPO concurrence on the NRHP eligibility. For Building A-1004, please record the structure in the FMSF and provide additional photos to assist our office in making an NR-eligibility determination.

Alternative 2: We understand that a pedestrian survey done in 2015 observed evidence of disturbance on the surface; however, deeply buried deposits may still be intact below the disturbed areas. Since conditions in the area are favorable for the presence of archaeological resources, we request that the project area be subjected to a professional cultural resources assessment survey.

If you have any questions, please contact Christopher Hunt, M.A., RPA, Historic Sites Specialist, by email at *Christopher.Hunt@dos.myflorida.com*, or by telephone at 850.245.6333 or 800.847.7278.

Sincerely,

Jason Aldridge
For
Timothy A Parsons, Ph.D., RPA
Director, Division of Historical Resources
& State Historic Preservation Officer

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK VA 23508-1278

IN REPLY REFER TO:
5090
Ser EV54DC/00295
14 JUL 2010

Julie Langan, Director
ATTN: Marc Holma
Division of Review and Compliance
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Dear Ms. Langan:

This letter initiates interagency coordination with your office regarding a proposed Department of the Navy (U.S. Navy) action to home base MQ-4C Triton Unmanned Aircraft Systems (Triton UAS) on the East Coast. This letter addresses one of three alternative locations identified in the Environmental Assessment (EA). Alternative 1 would home base Triton UAS aircraft at Naval Air Station (NAS) Key West and Alternative 2 would home base these aircraft at Naval Station (NS) Mayport; both installations are located in Florida. Under the third alternative, Triton UAS aircraft would be home based at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility (WFF) in Virginia (Figure 1).

1. DESCRIPTION OF UNDERTAKING.

Under the Proposed Action analyzed in the aforementioned EA, the Navy would home base four Triton UAS aircraft and support a maintenance hub for up to four additional Triton UAS. An average of five Triton UAS flight operations (take-offs or landings) per day (1,825 annually) would occur. Depending on the option, new construction and/or demolition of existing facilities and infrastructure would be implemented. Construction and/or demolition activities would begin in 2017, Triton UAS assets would begin arriving in 2019, and steady state operations would be achieved in the 2023 timeframe. In total, up to 400 personnel and approximately 500 family members are associated with the Proposed Action. Personnel and their family members would gradually relocate to the surrounding area in phases, from 2019 to 2023.

2. AREA OF POTENTIAL EFFECTS (APE).

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), the Navy identified and evaluated the APE, which encompasses the area where construction would occur. Introduction of 1,825 annual Triton UAS operations would not perceptibly change the noise levels already generated at the active airfield. Under the Proposed Action there would be a less than 1-decibel increase in average noise levels (*Note*: a 3-decibel change is barely detectible by the human ear). Under Alternative 3, WFF, approximately 10 acres at the WFF Main Base airfield would be developed to support the home basing action, of which about 5 acres are already developed (Figure 2). Construction would occur within the airfield environment and adjacent to runway 10/28.

3. IDENTIFICATION OF HISTORIC PROPERTIES.

NASA WFF in consultation with the SHPO has conducted an assessment-level investigation of the entire WFF titled, "Cultural Resources Assessment of NASA Wallops Flight Facility, Accomack County, Virginia" (URS/EG&G, 2003); and two reconnaissance-level architectural surveys of buildings, structures, and districts built before 1955 and between 1956 and 1965, respectively titled, "Historic Resources and Eligibility Report for Wallops Flight Facility, Accomack County, Virginia" (URS/EG&G, 2004); and "Historic Resources and Eligibility Survey for Wallops Flight Facility" (TEC, Inc. 2011).

Based upon the aforementioned identification and evaluation surveys, there are no known archaeological or architectural resources within the APE. However, in the event that intact subsurface cultural resources are inadvertently discovered during construction or demolition activities, work would cease immediately, the cultural resources would be evaluated for NRHP eligibility, and consultation would continue per 36 CFR parts 800.4 to 800.6. The WFF Historic Preservation Officer would follow the procedures outlined in the Integrated Cultural Resources Management Plan (August 2015) as well as Stipulations VII, VIII, XI, XII, and XIII of the "Programmatic Agreement among the National Aeronautics and Space Administration, the Virginia State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Management of Archaeological Resources at the Wallops Flight Facility, Wallops Island, Accomack County, Virginia" (17 December 2014).

While traditional cultural properties have not been recognized to date, pursuant to NASA's Programmatic Agreement, the Navy and NASA will notify the Pocomoke and Catawba Indian Nations about the Proposed Action and alternative.

4. DETERMINATION OF EFFECT.

The Navy and NASA have determined that the undertaking will have no effect on historic architectural or archaeological resources, as the APE does not contain NRHP-listed or eligible properties. Additionally, this undertaking meets the criteria for undertakings not requiring additional review under the Programmatic Agreement, as described in Appendix G, "Activities That Have Limited Potential to Effect Historic Resources." In accordance with Section 106, the Navy and NASA invite you to concur with the effect determination for this undertaking, within 30 days after receipt.

If you have any questions or need additional information, contact Darrell Cook, Architectural Historian at (757) 322-4282 or by e-mail: darrell.e.cook@navy.mil.

Sincerely,

J. R. CIRVELLO, P.E.
Environmental Business Line Manager
By direction of the Commander

Enclosures: 1. Figure 1 - Alternative 3, Wallops Flight Facility and Proposed Project Area
2. Figure 2 - Alternative 3, Wallops Flight Facility Construction Features

5090
Ser EV54DC/00295
14 JUL 2016

Copy to:
NASA WFF Historic Preservation Officer, Randall Stanley
Catawba Indian Nation, Dr. Caitlin Totherow, THPO
Pocomoke Indian Nation, Mr. Norris Howard, Paramount Chief

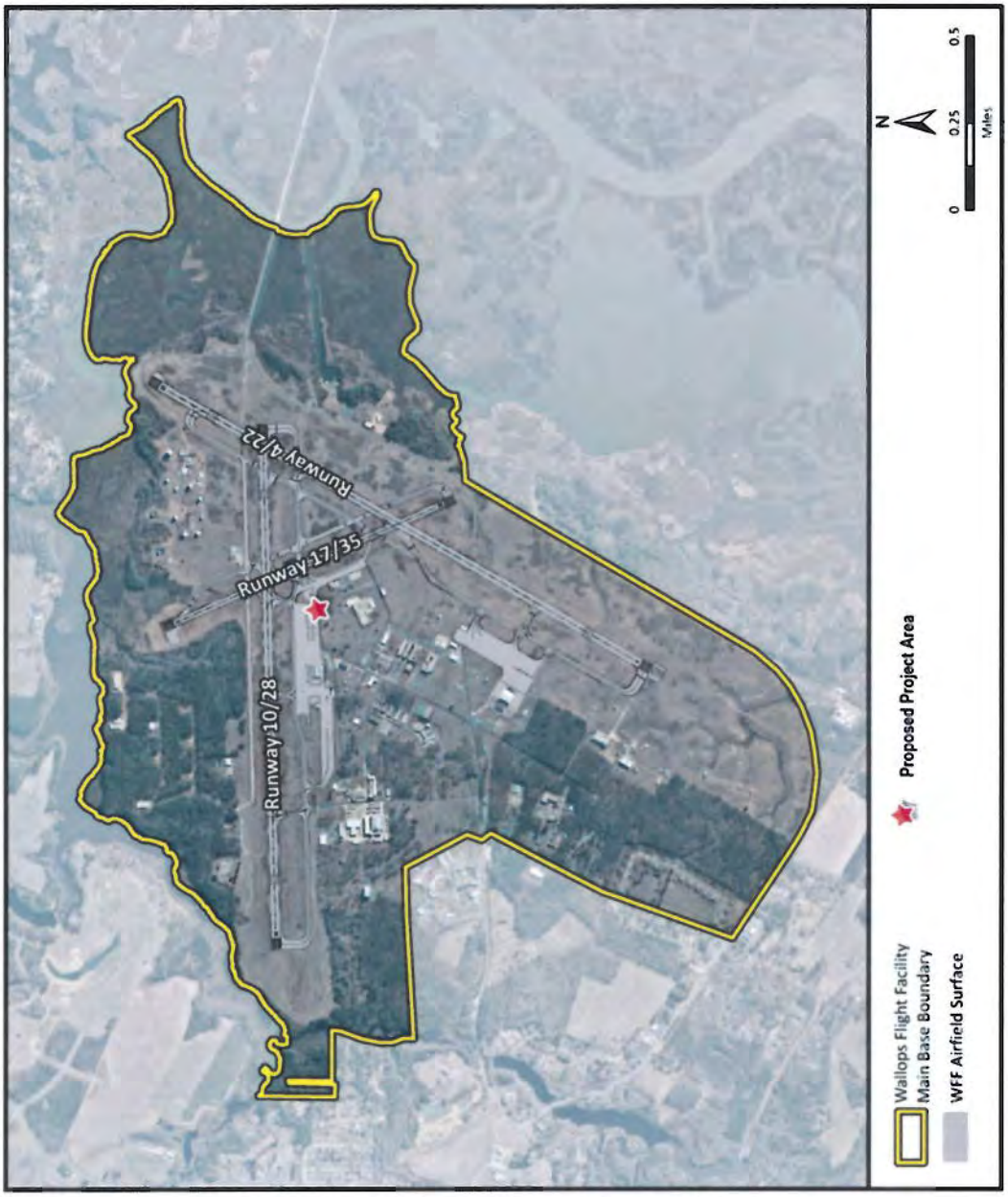


Figure 1 - Alternative 3, Wallops Flight Facility and Proposed Project Area

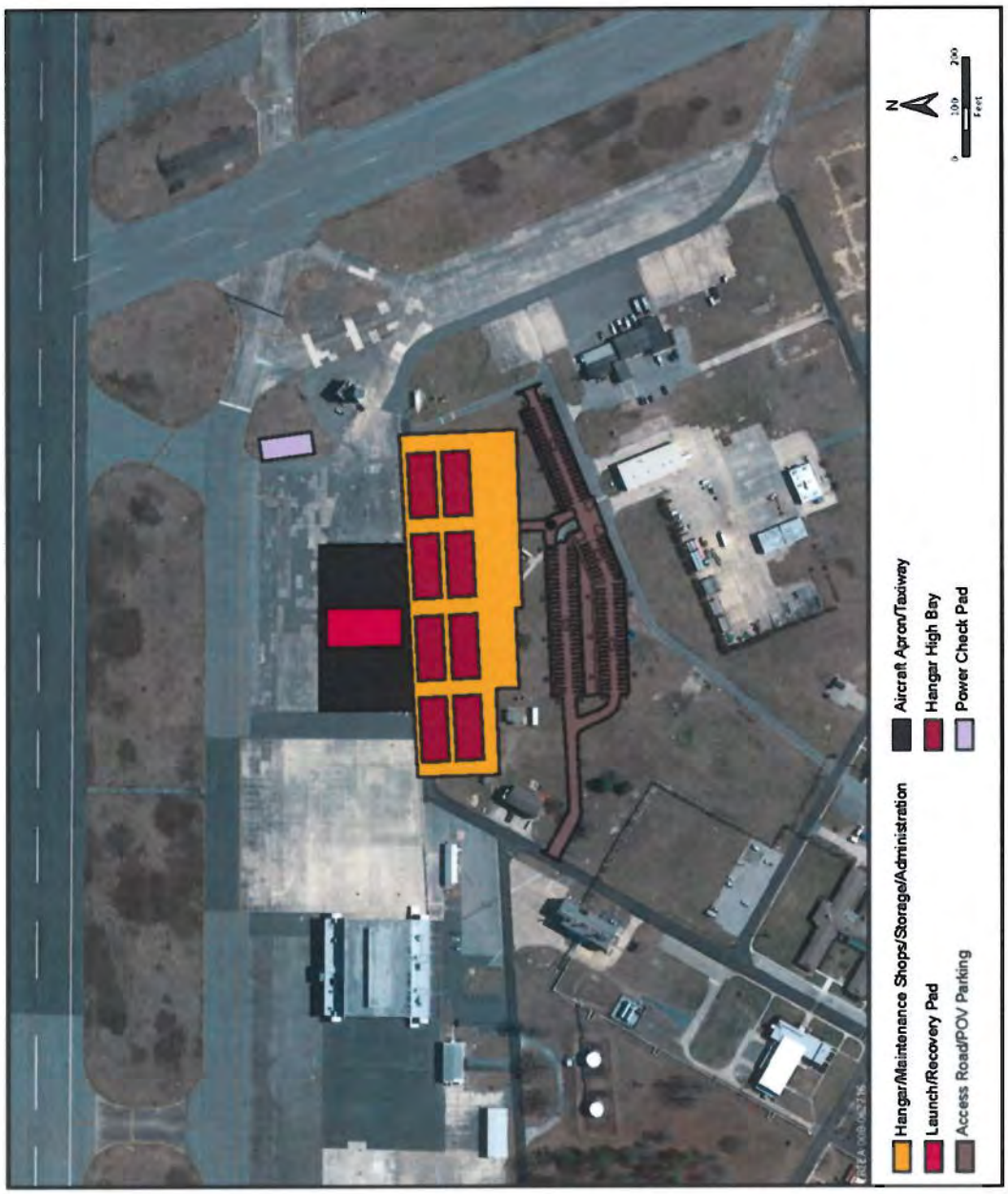


Figure 2 - Alternative 3, Wallops Flight Facility – Proposed Project Area Construction Features

-----Original Message-----
From: Holma, Marc (DHR) [mailto:Marc.Holma@dhr.virginia.gov]
Sent: Wednesday, August 10, 2016 10:19 AM
To: Cook, Darrell E CIV NAVFAC LANT, EV
Subject: [Non-DoD Source] Proposal to home base MQ-4C Triton Unmanned Aircraft Systems, Accomack Co. (2016-0727)

Darrell,

Please accept this email as DHR's official response to the Navy's request for our review and comment on the above referenced project. We concur that No Historic Properties will be Affected by the undertaking.

Sincerely,
Marc Holma

U.S. FISH AND WILDLIFE SERVICE

DEPARTMENT OF THE NAVY
NAVAL AIR STATION
PO BOX 9001
KEY WEST FL 33040-9001

5090
Ser PR74/ 229
June 2, 2016

Mr. Shawn Christopherson
U.S. Fish & Wildlife Service
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960-3559

SUBJECT: EAST COAST HOME BASING OF MQ-4C TRITRON UNMANNED AIRCRAFT SYSTEM AT NAVAL AIR STATION (NAS) KEY WEST

The Navy proposes to provide facilities and functions to operate and maintain the MQ-4C Triton unmanned aircraft system (UAS) on the east coast of the United States in one of three locations currently under consideration. NAS Key West is one of the three alternatives; the others are Naval Station (NS) Mayport in Florida and the Wallops Flight Facility on Virginia's Eastern Shore. Once evaluations are complete, construction on the home base facilities and infrastructure would begin in 2017, with operations projected to start in 2019.

The Navy has prepared a consultation package in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) to assess the potential effects on threatened and endangered species and their critical habitats from activities associated with the proposed action should NAS Key West be the location selected.

All federally-listed species and designated critical habitat that may occur in the Action Area were identified through a review of the NAS Key West Integrated Natural Resources Management Plan, biological survey reports, and the U.S. Fish and Wildlife Service's Information for Planning and Conservation system. It was concluded that the Proposed Action may affect, but is not likely to adversely affect, Lower Keys marsh rabbits; American crocodiles; silver rice rats; nesting loggerhead; green leatherback hawksbill sea turtles; roseate terns; piping plovers; and red knots. No critical habitat for these species, if designated, is located in the Action Area. Therefore, there would be no effect to critical habitat.

The analysis of the potential effects of the Proposed Action contained in the enclosed biological assessment (BA) is based on a review of the proposed activities, current historical distribution and occurrence data for each species, best management practices, and protective measures. A separate BA is being prepared for submittal to the North Florida Ecological Services field office for the Proposed Action at NS Mayport.

We respectfully request your concurrence with our conclusions no later than July 8, 2016. If you have any questions or need additional information in support of this request, please contact

my Environmental Director, Mr. Edward Barham at (305) 293-2911 or via e-mail: edward.barham@navy.mil.

Sincerely,

S. P. MCALEARNEY
Captain, U. S. Navy
Commanding Officer

Enclosure: 1. Biological Assessment for the East Coast Home Basing of MQ-4C Triton Unmanned Aircraft System at NAS Key West, Florida

Copy to: U.S. Fleet Forces Command (N465)
Commander, Patrol and Reconnaissance Group (N4)
Naval Air Systems Command, (CPRG N4, CPRG N51)
Naval Facilities Engineering Command, Atlantic (EV22)

-----Original Message-----
From: Barham, Edward M CIV NAVFAC SE, PWD Key West
Sent: Wednesday, June 15, 2016 7:29 AM
To: Christopherson, Shawn; 'Sandra Sneckenberger'; 'Powell, Brian'
Cc: Huxley, Taura A CIV NAVFAC SE, EV; Martin, Matthew S CIV NAVFAC SE, PWD Key West
Subject: NASKW Triton Homebasing Consultation Package - minor revision

Mr. Christopherson;

In reference to our ESA section 7 consultation submittal dated 6 June 2016, we have identified an error on page 5, in Section 3.2 Hangars and Pavements. The projected hangar size is currently shown as 75,000 square feet, but it should read 150,000 square feet. All figures are accurate; only this number should be changed. The attached version of the BA contains the corrected square footage.

Please contact me if you need any additional information regarding this change.

Thank you;
Edward Barham
Environmental Director
Naval Air Station
P.O. Box 9007
Key West, FL 33040

BIOLOGICAL ASSESSMENT

FOR

THE EAST COAST HOME BASING

OF

MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM

AT

NAVAL AIR STATION KEY WEST, FLORIDA

June 2016

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List of Acronyms

BO	Biological Opinion
CONUS	continental US
dBA	decibel (A-weighted)
EA	environmental assessment
ESQD	Explosive Safety Quantity Distance
FOB	Forward Operating Base
FWC	Florida Fish and Wildlife Conservation Commission
ISR	intelligence, surveillance and reconnaissance
LED	light emitting diode
LKMR	Lower Keys marsh rabbit
MCS	Mission Control System
NAS	Naval Air Station
NASA	National Aeronautics and Space Administration
NS	Naval Station
OCONUS	outside of the continental US
POV	privately-owned vehicle
PWD	Public Works Department
UAS	Unmanned Aircraft System
U.S.	United States
USFWS	US Fish and Wildlife Service

1. Purpose and Need for the Proposed Action

The United States (U.S.) Navy (Navy), along with the National Aeronautics and Space Administration (NASA) proposes to provide facilities and functions to operate and maintain the MQ-4C Triton unmanned aircraft system (UAS) (Figure 1-1) on the east coast of the U.S. Under the Proposed Action, the Navy plans to establish a launch and recovery site for four home based MQ-4C Triton UAS and support an operational-level maintenance hub for up to four additional aircraft undergoing maintenance actions. The East Coast home base location would be a permanent duty station for up to 400 personnel, plus family members, and would support rotational deployments of personnel and aircraft outside the continental U.S. (OCONUS). Facility construction and renovations would begin in 2017 and associated deployable fleet UAS assets would begin operations in 2019, reaching a steady state of operations in the 2023 timeframe.

Figure 1-1. MQ-4C Triton Unmanned Aircraft System

2. Proposed Locations on the U.S. East Coast

Three alternative MQ-4C Triton UAS east coast home bases are being evaluated for the Proposed Action:

1. Naval Air Station (NAS) Key West, Florida,
2. Naval Station (NS) Mayport, Florida, and
3. NASA Wallops Flight Facility, Virginia.

This BA pertains only to the NAS Key West alternative since that is the only one of the three alternative locations under the U.S. Fish and Wildlife Service (USFWS) South Florida Ecological Services Field Office's jurisdiction. A separate biological assessment has been prepared for the NS Mayport alternative and submitted to the North Florida Ecological Services Field Office.

2.1 Naval Air Station Key West, Florida

Naval Air Station (NAS) Key West is comprised of approximately 2,630 hectares (6,500 acres) of land distributed over several properties located in the Florida Keys, Monroe County, Florida (Figure 2-1). The approximately 1,902 hectare (4,700 acre) Boca Chica Field property is NAS Key West's primary site. Boca Chica Field is located on Boca Chica Key, approximately 8 kilometers (5 miles) east of the city of Key West in Monroe County, 251 kilometers (156 miles) southwest of Miami, and 145 air kilometers (90 miles) north of Cuba. Key West is the closest point in the United States to Cuba, South America, and the Caribbean Sea, making NAS Key West a significant military and homeland security asset, independent of its role as an aviation training venue. Available airspace and high quality flying days make NAS Key West a primary flight training facility for the Navy.

Figure 2-1. Map of the Naval Air Station Key West, Florida properties
Source: NAS Key West Integrated Natural Resources Management Plan

3. Description of the Proposed Action

Under the NAS Key West Alternative, all associated infrastructure, equipment and supporting personnel necessary for a fully operational Triton UAS home base would be developed at NAS Key West, including: airfield elements, hangar space, UAS control facility, power check pad, wash rack, battery storage, sewer line, and other supply/storage facilities. Development of the

proposed home base under the NAS Key West Alternative would involve a mix of new construction, use of existing infrastructure and services and changes to installation land use as described in the bullets below. Figure 3-1 depicts the NAS Key West project area and proposed location of key infrastructure elements.

3.1 Flights, Airspace, and Runways

Triton UAS flight operations are projected to occur initially on Runway 08/26 for launch and recovery (Figure 3-2), though other runways may be used. An average of five flight operations would occur each day and share Runway 08/26 with existing flight activities at NAS Key West. Existing flight operations average 143 per day. Runway 08/26 includes arresting gear. The arresting cables would need to be disconnected prior to each Triton UAS flight operation. Triton UAS control (for Triton UAS mission planning, start, taxi, launch and recovery) would be provided from the existing air field air traffic control tower (Building A-4202).

3.2 Hangars and Pavements

This project would require construction of a new hangar facility of approximately 150,000 $ft.^2$ to accommodate up to eight Triton UAS aircraft at any time. The east coast home base would have four primary assigned aircraft as well as maintenance responsibility for eight rotating outside the CONUS (OCONUS) aircraft for a total maintenance responsibility of twelve aircraft.

The proposed hangar location is shown in Figure 3-1. The hangar location would be situated on an existing unused taxiway (previously disturbed surfaces) and a new taxiway would be constructed around the site. A paved aircraft parking apron (approximately 3 acres) is proposed for new construction between the hangar and the taxiway. The parking apron may disturb approximately 3 acres of wetlands. New construction to accommodate parking for privately-owned vehicles (POVs) is proposed east of the hangar. The parking lot would accommodate up to 160 vehicles.

A sewer line is proposed for installation in the existing roadway from the main project area to the closest Florida Keys Aqueduct Authority lift station. The total length of the line would be approximately 8,400 linear feet and ground disturbance would be limited to the paved road and immediately adjacent vegetated areas (i.e., road shoulder).

3.3 Demolition and Reconstruction Activities

Several installation modifications would occur to accommodate the Triton UAS infrastructure. A portion of the existing taxiway is proposed for reuse as the Triton UAS hangar site and adjacent warehouse site. With this modification, a new taxiway is proposed to be constructed across previously disturbed terrain. To accommodate the proposed aircraft parking apron, power check pad and wash rack, approximately 3 acres of wetlands may be impacted. To accommodate POV parking, two existing facilities along with associated fencing (A-1004 and A-1005) scheduled for demolition would be removed. Finally, the existing East Side Drive would be realigned and connected with the parking lot.

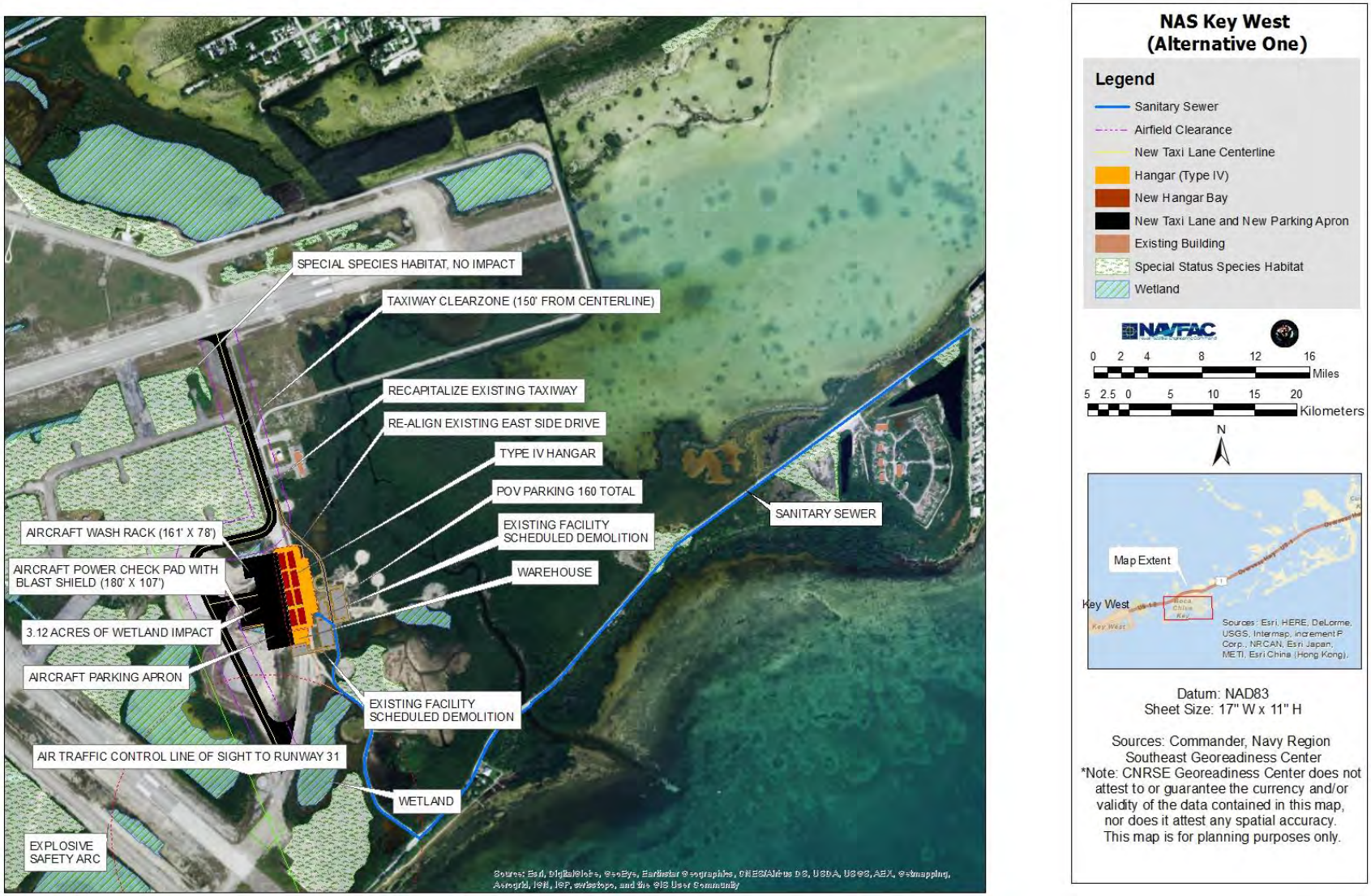
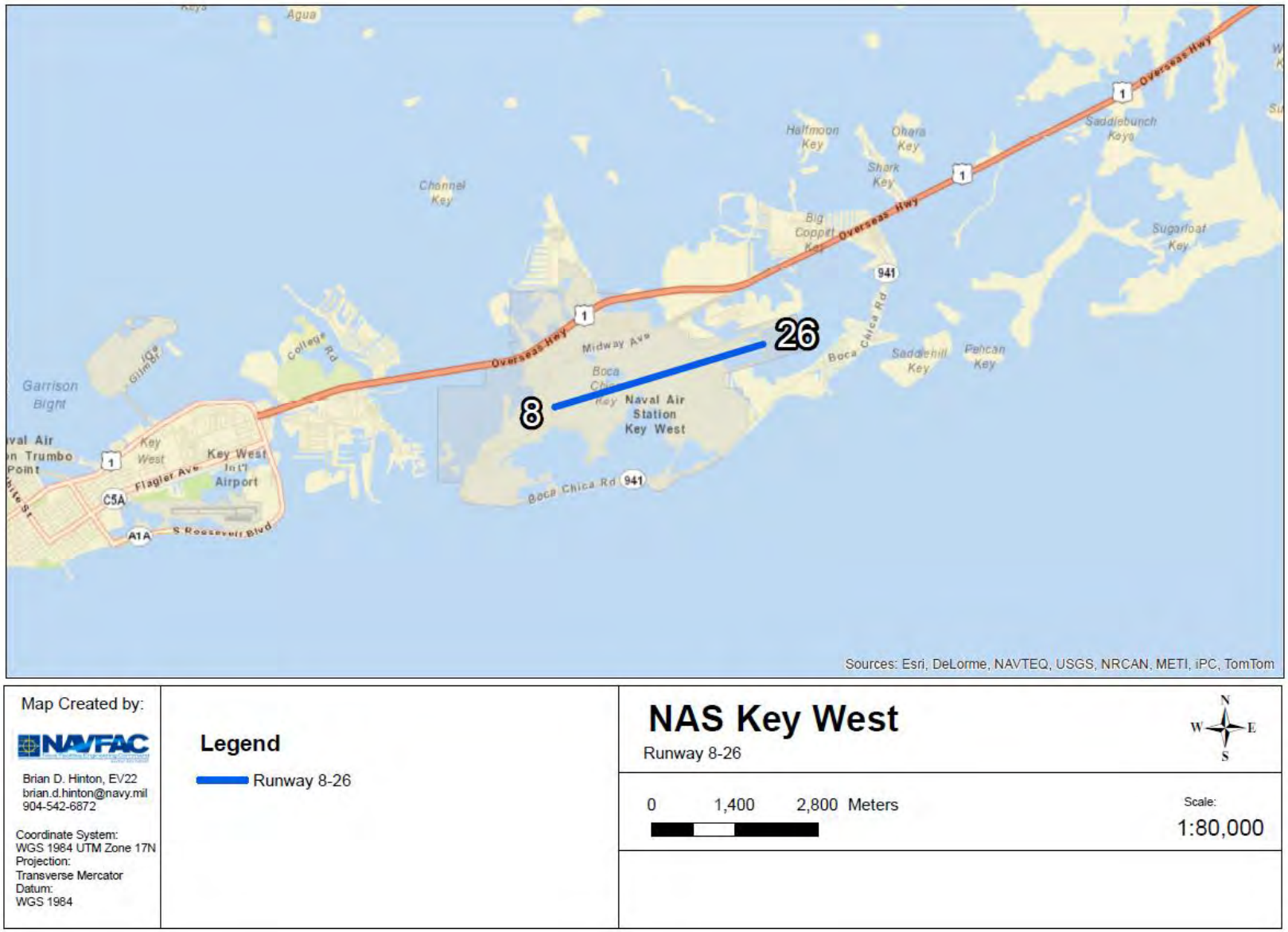


Figure 3-1. Naval Air Station Key West Project Area and Key Infrastructure Elements



Map Created by:

NAVFAC

Brian D. Hinton, EV22
brian.d.hinton@navy.mil
904-542-6872

Coordinate System:
WGS 1984 UTM Zone 17N
Projection:
Transverse Mercator
Datum:
WGS 1984

Legend

Runway 8-26

NAS Key West

Runway 8-26

N W E S

0 1,400 2,800 Meters

Scale:
1:80,000

Figure 3-2. Runway Proposed for Use

3.4 Power Check Pad

The power check pad required to support the Triton UAS would be constructed west of the proposed hangar location and parking apron. The power check pad (and blast shield) would be located on a paved area approximately 19,260 ft.^{2} (1,789 m^2) (180 ft. x 107 ft.).

3.5 Aircraft Wash Rack

The aircraft wash rack required to support the Triton UAS would contain the rinse water runoff from the Triton UAS. Construction of a new aircraft wash rack would be required. The wash rack would be located on a paved area west of the proposed hangar and aircraft parking apron in an area approximately 161 ft. x 78 ft. (12,558 ft.^{2}) and will be connected to the wastewater system.

3.6 Other Storage and Supply

Requirements for storage of supplies including batteries would be accommodated in the proposed warehouse.

3.7 Personnel

Approximately 400 Triton UAS personnel (officers, enlisted and contractors) would be stationed at NAS Key West if it is selected as the preferred location. Assuming that each new personnel would be accompanied by an average of 1.3 family members, approximately 900 people would relocate to the neighborhoods and communities surrounding Boca Chica Field.

4. Listed Species, Potential Impacts, and Protective Measures

4.1 Lower Keys Marsh Rabbit

One of three metapopulations of the Lower Keys Marsh Rabbit (LKMR) (*Sylvilagus palustris hefneri*) occurs on NAS Key West properties. The first Biological Opinion (BO) for the LKMR relative to Navy actions was completed in 1993. That BO discussed threats to the LKMR, including vehicle operation, mowing, and feral cat predation, which have been addressed by proactive measures taken by the installation. A subsequent BO was completed in 2007 and focused on the Boca Chica airfield restoration and modification project. This BO addressed habitat loss, creation and restoration associated with making the airfield compliant with Navy and Federal Aviation Administration safety regulations. Prescribed mitigations to benefit LKMR habitat are underway and trending towards success with LKMR pellets observed in some mitigation areas within a year of creation. Since these areas were planted with vegetation specifically preferred by the LKMR, it is plausible that, once these habitats are fully established, LKMR densities may exceed those previously documented on the installation.

Annual monitoring data for the LKMR on NAS Key West show variable abundance between years. This may be due to actual changes in abundance or lack of fidelity to the sampled patches. Regardless, in 1999, densities of LKMR on Navy-managed lands were more than four times greater than densities range-wide, suggesting a propensity for greater LKMR densities on Navy lands, perhaps owing to higher habitat quality.

The 2006 Population Variability Analysis of the LKMR on Boca Chica Key, as well as annual survey reports, indicated that predation by raccoons and feral cats were likely significant stressors on the LKMR population. Between 2010 and 2014, NAS Key West has removed a total of 28 cats and 285 raccoons on Navy properties in and adjacent to LKMR habitats.

Large storm events have also been cited as a major factor affecting LKMR abundance, an assertion supported by the data collected on NAS Key West. Storm surge during Hurricane Wilma, a Category 3 hurricane that struck NAS Key West in 2005, inundated LKMR habitats in the lower Florida Keys resulting in high patch abandonment (37.5%) and low rates of patch re-occupancy (38.1%) two years after the hurricane (Schmidt et al. 2012). Seventy-one percent of radio-collared LKMR were determined to have died after the hurricane.

While mortality associated with predators and storms may be affecting LKMR abundance, direct evidence of that mortality is rarely seen. Alternatively, mortality from vehicle strikes is much more observable, even if it is not as significant a factor influencing population size.

The 1993 BO required elimination of off-road driving, use of slow zones in LKMR habitat, and education of installation personnel regarding the LKMR. All indicators are that these measures have been successful even as the base supports about 8,000 occupants during a typical work day. Vehicular incidental takes have not occurred in the part of the airfield where the Action Area is located (Figure 4-1) and the minor increase in traffic resulting from the Proposed Action is not expected to result in an increase in average annual mortalities. The increase in number of flights associated with the project would not adversely affect the LKMR due to the relatively small proportional increase from current levels. Additionally, noise levels generated by facility construction and operation of the Triton UAS, ranging from approximately 60 – 90 dBA[1] would be less than those produced from current flight operations. LKMRs may have habituated to existing noise levels based on the population density adjacent to the airfield.

Airfield operations and clear zone management associated with the Proposed Action would be performed in accordance with their respective biological opinions[2].

Potential impacts to the LKMR during construction would be minimized by searching the construction area each day before work begins and stationing an observer to walk ahead of moving construction equipment in areas where ground cover may conceal a LKMR.

Additionally, speed limit and habitat signs would be posted along roadways to / from the Triton UAS facilities, and incoming personnel would continue to receive environmental awareness briefings that include an explanation of protective measures for the LKMR.

Pursuant to the ESA, the Proposed Action may affect, but is not likely to adversely affect, Lower Keys marsh rabbits.

[1] U.S. Navy 2013 Airfield Operations Environmental Impact Statement

[2] Biological opinion for airfield operations at NAS Key West USFWS Log # 4-1-92-333 and biological opinion for restoration of clear zones and stormwater drainage systems SCC 41420-2006-F-0297

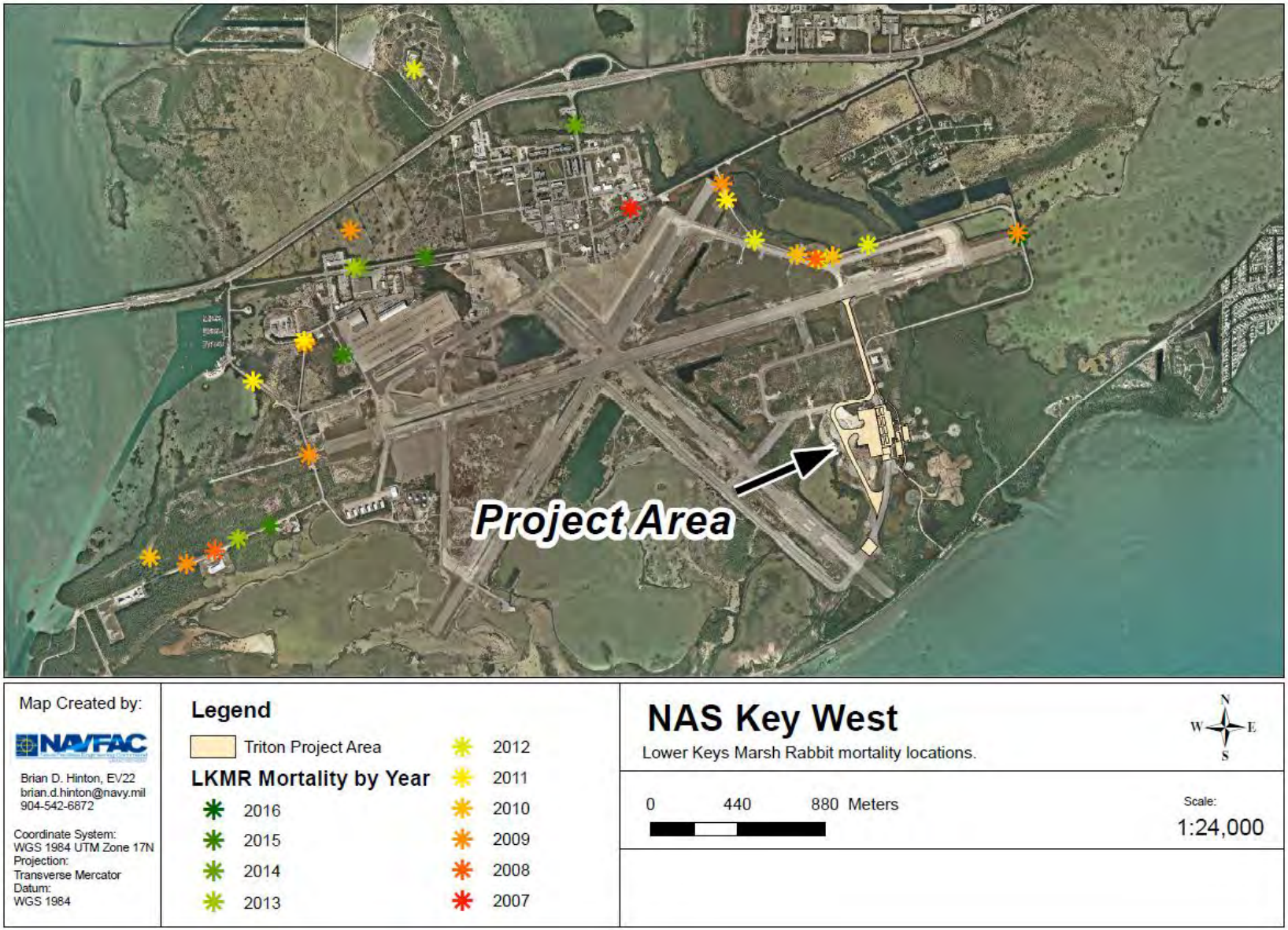


Figure 4-1. Locations of Lower Keys Marsh Rabbit Vehicular Mortality, Depicted by Year

4.2 American Crocodile

The American crocodile (*Crocodylus acutus*) inhabits fresh and brackish coastal habitats, but ventures into more saline environments and will cross long expanses of dry ground. It is federally-threatened and the population has recovered in recent decades due to conservation efforts. American crocodiles are occasionally sighted on the Boca Chica Key airfield and a series of four professional surveys conducted on Boca Chica Key in 2014 documented 21 American crocodile sightings in proximity to the Action Area (Figure 4-2). No vehicle collisions have been documented on the installation. Due to the high mobility of crocodiles, it is not expected that any will be harmed by the Proposed Action. Minor behavioral disturbance (e.g., avoidance of the immediate area) may occur during construction activities, but individuals are expected to return to the area once they are complete. Habitat impacts resulting from the Proposed Action would be minor, with large areas of high quality habitat remaining in other locations around the installation (Mazzoti 2014). There is no critical habitat in the Action Area. Potential impacts to crocodiles are not expected to differ appreciably from those resulting from naturally occurring phenomena and existing activity levels. Therefore, overall effects would be insignificant. Areas impacted by the Proposed Action would be surveyed for American crocodiles immediately prior to construction activities to ensure no animals are present.

Pursuant to the ESA, the Proposed Action may affect, but is not likely to adversely affect, American crocodiles; and would have no effect on their critical habitat as none is located in the Action Area.

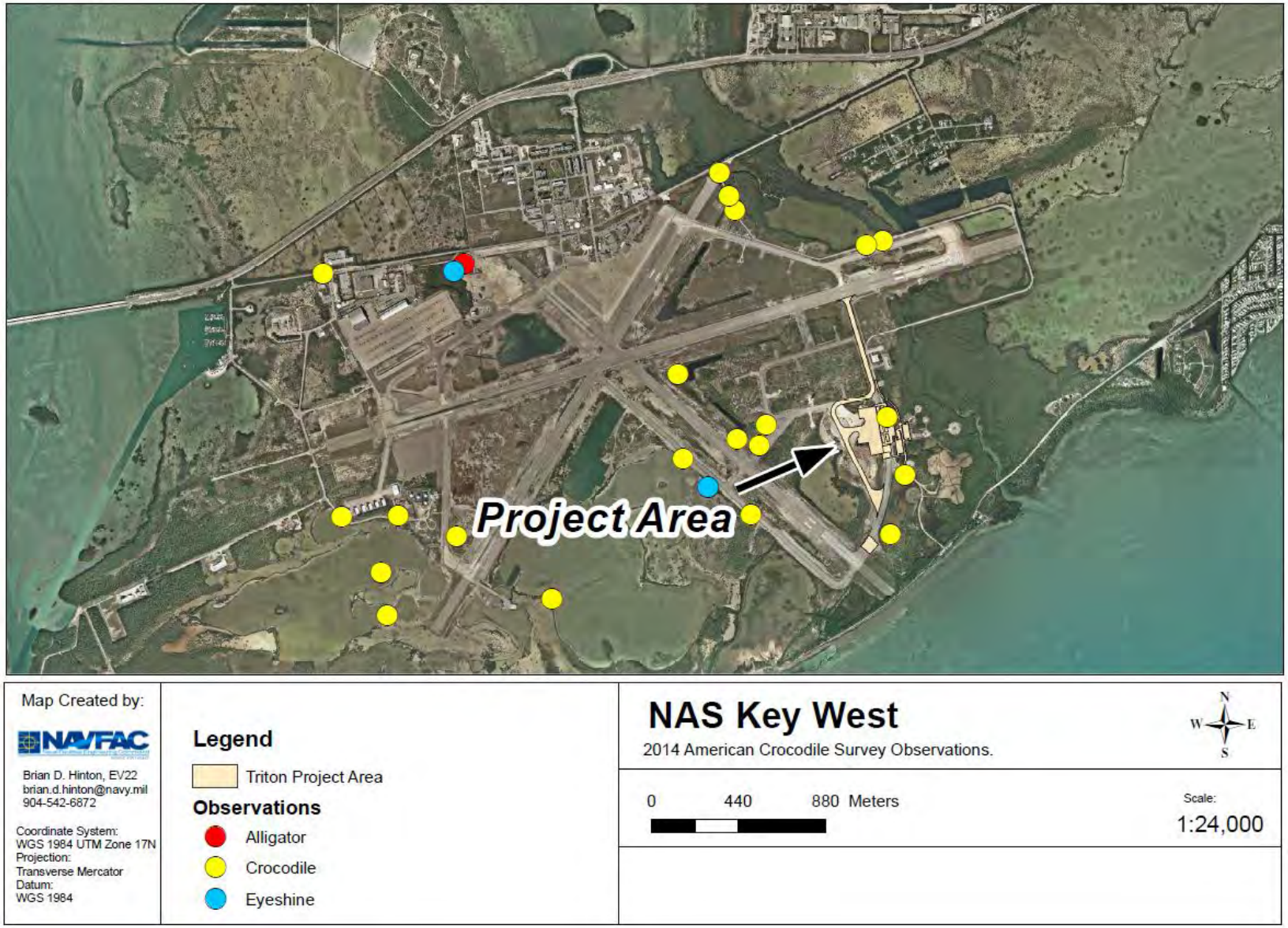


Figure 4-2 Crocodile Survey Sightings

4.3 Silver Rice Rat

The federally-endangered silver rice rat (*Oryzomys argentatus*) is endemic to the lower Florida Keys and almost exclusively inhabits saltmarsh habitat. NAS Key West conducts regular surveys for silver rice rats on its properties. Although much of the low-saltmarsh and dwarf mangrove habitats on Boca Chica Key are suitable for silver rice rats, no specimens have been captured there despite surveys by small-mammal experts in 2004 and 2010. Further, the Action Area does not contain the silver rice rat's preferred salt marsh habitat, and contains no critical habitat. As such, the likelihood of this species occurring in the Action Area is very low. Areas impacted by the Proposed Action would be surveyed for silver rice rats immediately prior to construction activities to ensure no individuals are impacted.

Pursuant to the ESA, the Proposed Action may affect, but is not likely to adversely affect, silver rice rats; and would have no effect on their critical habitat as none is located in the Action Area.

4.4 Nesting Sea Turtles

Loggerhead sea turtles (*Caretta caretta*) and green sea turtles (*Chelonia mydas*) are known to nest in the lower Florida Keys, and hawksbill (*Eretmochelys imbricata*) and leatherback (*Dermochelys coriacea*) may occasionally nest in the area as well.

Loggerhead sea turtles in the Northwest Atlantic Ocean distinct population segment (DPS) and green sea turtles in the North Atlantic DPS are federally-listed as threatened, while hawksbill and leatherback sea turtles are classified as endangered. There is no critical habitat for these species in the Action Area. Loggerhead sea turtles are the most frequent nesters of the four species, but the numbers documented at Boca Chica are very low. From 2012 – 2015, a total of 26 sea turtle nests (25 loggerhead and one green) were documented (FWC 2016).

Noise created during construction and renovation activities and Triton UAS flight operations may result in temporary behavioral disturbance of sea turtles, but the zone of influence is expected to be largely limited to the immediate area around the hangar and runways, away from known nesting beaches. These minor changes in behavior are not expected to differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Given the current level of air traffic at NAS Key West and the Triton UAS' relatively low sound levels (approximately 33 dB quieter than the F/A-18E/Fs), ongoing impacts would be insignificant and discountable.

Once the hangar and supporting infrastructure are operational, there may be minor alterations to the location and intensity of lighting in the project area which could affect nesting sea turtles. The Navy would ensure, to the extent warranted and consistent with operational safety and security concerns, that lights installed for the Proposed Action adhere to the FWC Approved Sea Turtle Lighting Guidelines. The use of appropriate lights and fixtures – to include the use of amber LED bulbs, limiting the height of fixtures when appropriate, and shielding bulbs to prevent direct light shining towards the beach and mitigate unnecessary sky glow – would ensure that the Proposed Action does not negatively affect nesting sea turtles and hatchlings. These measures would be incorporated into construction contract requirements to the maximum extent practicable. Changes to existing lighting have the potential to impact nesting sea turtles, but

based on the very low numbers of individuals nesting at Boca Chica, distance from the nesting areas to the project area (≥ 2,000 feet), and intervening woody vegetation, effects would be insignificant and discountable.

Pursuant to the ESA, the Proposed Action may affect, but is not likely to adversely affect, nesting loggerhead, green, hawksbill, and leatherback sea turtles, or their hatchlings; and would have no effect on their critical habitat as none is located in the Action Area.

4.5 Listed Birds

The roseate tern (*Sterna dougallii*), piping plover (*Charadrius melodus*), and red knot (*Calidris canutus rufa*) are federally-listed bird species occurring in vicinity of the Action Area. All three are listed as threatened in Florida, although the roseate tern and piping plover are also listed as endangered elsewhere in the U.S.

Roseate terns are known to nest on a few select rooftops at NAS Key West properties. They forage for small schooling fish over shallow waters around bays, channels, sandbars, shoals, and reefs (Gochfeld et al. 1998; Nisbet and Spendelow 1999), and are also known to forage over deeper waters than other tern species (Olsen and Larsson 1995).

Piping plovers and red knots do not nest in the Florida Keys, but they migrate through during fall, winter, and spring. Piping plovers and red knots typically inhabit shoreline and open limestone habitats in the Keys, foraging in the intertidal zone of beaches and marshes.

All three species may occur incidentally in the Action Area, but potential effects are limited to temporary behavioral changes such as avoidance during construction. These changes would be minor and are not expected to differ appreciably from those resulting from other stressors such as evasion of predators or severe weather events. Potential impacts from flights would be limited to collisions. In historic studies, there were no demonstrated impacts of military activity on wading bird colony establishment or size, and aircraft disturbance did not seem to adversely affect waterfowl observed during a study in coastal North Carolina (Black et al. 1984; Conomy et al. 1998). No impacts to feeding, sheltering, or reproduction are anticipated for these species.

The Navy employs USDA staff to ameliorate bird strike hazards at NAS Key West and those efforts have been successful. No recent aircraft strikes of listed birds have been documented (Walls pers. comm. 2016). Because the Action Area contains no suitable nesting or foraging habitat, the likelihood of piping plovers, red knots, or roseate terns occurring in the Action Area is very low. Therefore, effects from the Proposed Action would be insignificant and discountable.

Pursuant to the ESA, the Proposed Action may affect, but is not likely to adversely affect, roseate terns, piping plovers, and red knots; and would have no effect on piping plover critical habitat as none is in the Action Area.

5. References

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DEPARTMENT OF THE NAVY
NAVAL STATION MAYPORT
P.O. BOX 280112
JACKSONVILLE, FLORIDA 32228-0112

5090.2
N4E/0542
June 10, 2016

Mr. Jay Herrington
Field Supervisor
U.S. Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Dear Mr. Herrington:

SUBJECT: EAST COAST HOME BASING OF MQ-4C TRITRON UNMANNED AIRCRAFT SYSTEM AT NAVAL STATION (NAVSTA) MAYPORT

The Navy proposes to provide facilities and functions to operate and maintain the MQ-4C Triton unmanned aircraft system (UAS) on the east cost of the U.S. in one of three locations currently under consideration. Naval Station (NAVSTA) Mayport is one of the three alternatives; the others are Naval Air Station (NAS) Key West in Florida and the Wallops Flight Facility on Virginia's Eastern Shore. Once evaluations are complete, construction on the home base facilities and infrastructure would begin in 2017 with operations projected to start in 2019.

The Navy has prepared a consultation package in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) to assess the potential effects on threatened and endangered species and their critical habitats from activities associated with the proposed action should NAVSTA Mayport be the location selected.

All federally-listed species that may occur in the Action Area were identified through a review of the NAVSTA Mayport Integrated Natural Resources Management Plan, biological survey reports, and the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) system. It was concluded that the Proposed Action may affect, but is not likely to adversely affect, nesting loggerhead, green, and leatherback sea turtles; wood storks; piping plovers; and red knots. Of these species, critical habitat has been designated for loggerhead, green, and leatherback sea turtles; and piping plovers. The Proposed Action would have no effect on their critical habitats because none are located in the Action Area.

The analysis of the potential effects of the Proposed Action contained in the enclosed biological assessment (BA) is based on a review of the proposed activities, current and historical distribution and occurrence data for each species, best management

SUBJECT: EAST COAST HOME BASING OF MQ-4C TRITRON UNMANNED AIRCRAFT SYSTEM AT NAVAL STATION (NAVSTA) MAYPORT

practices, and protective measures. A separate BA for the Proposed Action at NAS Key West is being prepared for submittal to the South Florida Ecological Services Field Office.

We respectfully request your concurrence with our conclusions no later than 08 July 2016. The Naval Station (NAVSTA) Mayport Public Works Department point of contact regarding this matter is Mr. Joseph Marshall, Environmental Program Specialist. Mr. Marshall may be contacted at (904)270-3191 or via email at joseph.r.marshall@navy.mil.

Sincerely,

L. B. GREENE
CDR, CEC, USN
Public Works Officer
By direction of the
Commanding Officer

Enclosure: 1. Biological Assessment for the East Coast Home Basing of MQ-4C Triton Unmanned Aircraft System at Naval Station (NAVSTA) Mayport, Florida

Copy to: via email
U.S. Fleet Forces Command
Commander Patrol and Reconnaissance Group
Naval Air Systems Command, PMA-262
Naval Facilities Engineering Command, Atlantic

-----Original Message-----
From: Huxley, Taura A CIV NAVFAC SE, EV
Sent: Wednesday, June 15, 2016 9:28 AM
To: 'jay_herrington@fws.gov'
Cc: Kruse, Linda L CIV NAVFAC SE, PWD Mayport; Loop, Patricia K CIV NAVFAC SE, PWD Mayport; Marshall, Joseph R CIV NAVFAC SE, ENV
Subject: NS Mayport Triton Homebasing Consultation Package - minor revision

Good morning Mr. Herrington,

In reference to our ESA section 7 consultation submittal dated 10 June 2016, we have identified an error on page 3, in Section 3.3 Hangars and Pavements. The projected hangar size is currently shown as 75,000 square feet, but it should read 150,000 square feet. All figures are accurate; only this number should be changed. The attached version of the BA contains the corrected square footage.

Please contact Trish Loop (904-270-6070) or me if you need any additional information regarding this change.

Thank you,
Taura Huxley

Naval Facilities Engineering Command, Southeast Box 30, Building 903 NAS Jacksonville, FL 32212-0030
Comm: (904) 542-6307 / DSN: 942-6307

BIOLOGICAL ASSESSMENT

FOR

THE EAST COAST HOME BASING

OF

MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM

AT

NAVAL STATION MAYPORT, FLORIDA

June 2016

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List of Acronyms

BASH	Bird Aircraft Strike Hazard
CONUS	continental United States
DPS	Distinct Population Segment
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity-Distance
FOB	Forward Operating Base
FWC	Florida Fish and Wildlife Conservation Commission
LED	light-emitting diode
MCS	mission control systems
MWR	Morale, Welfare, and Recreation
NAS	Naval Air Station
NASA	National Aeronautics and Space Administration
NS	Naval Station
OCONUS	outside the continental United States
POV	privately owned vehicle
RV	recreational vehicle
SEL	sound exposure level
UAS	unmanned aircraft system
U.S.	United States
USFWS	United States Fish and Wildlife Service

1. Purpose and Need for the Proposed Action

The United States (U.S.) Navy (Navy), along with the National Aeronautics and Space Administration (NASA) proposes to provide facilities and functions to operate and maintain the MQ-4C Triton unmanned aircraft system (UAS) (Figure 1-1) on the east coast of the U.S. Under the Proposed Action, the Navy plans to establish a launch and recovery site for four home based MQ-4C Triton UAS and support an operational-level maintenance hub for up to four additional aircraft undergoing maintenance actions. The East Coast home base location would be a permanent duty station for up to 400 personnel, plus family members, and would support rotational deployments of personnel and aircraft outside the continental U.S. (OCONUS). Facility construction and renovations would begin in 2017 and associated deployable fleet UAS assets would begin operations in 2019, reaching a steady state of operations in the 2023 timeframe.

Figure 1-1. MQ-4C Triton Unmanned Aircraft System

2. Proposed Locations on the U.S. East Coast

Three alternative MQ-4C Triton UAS east coast home bases are being evaluated for the Proposed Action:

1. Naval Air Station (NAS) Key West, Florida,
2. Naval Station (NS) Mayport, Florida, and
3. NASA Wallops Flight Facility, Virginia.

This BA pertains only to the NS Mayport alternative since that is the only one of the three alternative locations under the U.S. Fish and Wildlife Service (USFWS) North Florida Ecological Field Office's jurisdiction. A separate biological assessment has been prepared for the NAS Key West alternative and will be submitted to the South Florida field office.

2.1 Naval Station Mayport, Florida

Naval Station Mayport is located 24 kilometers (15 miles) east of Jacksonville, Florida, on approximately 1,380 hectares (3,409 acres) at the mouth of the St. Johns River in Duval County (Figure 2-1). NS Mayport's operational composition is unique, with a busy harbor capable of accommodating 34 ships and a 2,440 meter (8,000-foot) runway capable of handling any aircraft in the Department of Defense inventory.

Figure 2-1. Map of Naval Station, Mayport, Florida[1]

3. Description of the Proposed Action

Under the NS Mayport Alternative, all associated infrastructure, equipment and supporting personnel necessary for a fully operational Triton UAS home base would be developed at NS Mayport, including: airfield elements, hangar space, UAS control facility, power check pad, wash rack, battery storage and other supply/storage facilities. Development of the proposed home base would involve a mix of new construction, use of existing infrastructure and services and

[1] Source: NS Mayport Integrated Natural Resources Management Plan

changes to installation land use as described in the bullets below. Figures 3-1 and 3-2 depict the NS Mayport project area and location of key infrastructure elements, respectively.

3.1 Flights and Runways

Triton UAS flight operations would utilize Runway 05/23 for launch and recovery. An average of five Triton UAS flights are projected to occur each day, primarily from Runway 05/23. Roughly 250 to 300 flight operations occur daily at current levels. The NS Mayport airfield experiences a light to medium level of flight activity. The airfield has a single usable runway: Runway 05/23 (8,001 ft. x 200 ft.). The NS Mayport Alternative would utilize the existing runway, but construction of a new taxiway segment and apron would be necessary. The new taxiway segment would be approximately 750 feet long. The elevation at NS Mayport Admiral David L. McDonald Field is 15 feet above mean sea level.

3.2 Triton UAS Control Facility

Triton UAS control (for Triton UAS mission planning, start, taxi, launch and recovery) would be provided from a proposed newly-constructed control facility adjacent to the hangar complex. Line of sight communications connectivity to the runway would be achieved based on the control facility location and design, and a 160-foot cable will be buried between the mission control systems (MCS) facility and an antenna tower. The antenna tower height is expected to be 44 feet.

3.3 Hangars and Pavements

This project would require construction of a new hangar facility to accommodate up to eight Triton UAS aircraft at any time. The CONUS Forward Operating Base (FOB) located on the east coast will have four aircraft as primary assigned aircraft. But the FOB will have maintenance responsibility for these four aircraft and eight rotating OCONUS aircraft for a total maintenance responsibility of twelve aircraft. New construction of an aircraft hangar of approximately 150,000 square feet is required to accommodate up to eight Triton UAS. A paved dedicated UAS parking apron (approximately 150,000 square feet) is proposed for new construction between the hangar and the taxiway. New construction to accommodate parking for privately owned vehicles (POV) is proposed northwest of the hangar.

Figure 3-1. Naval Station Mayport Project Area

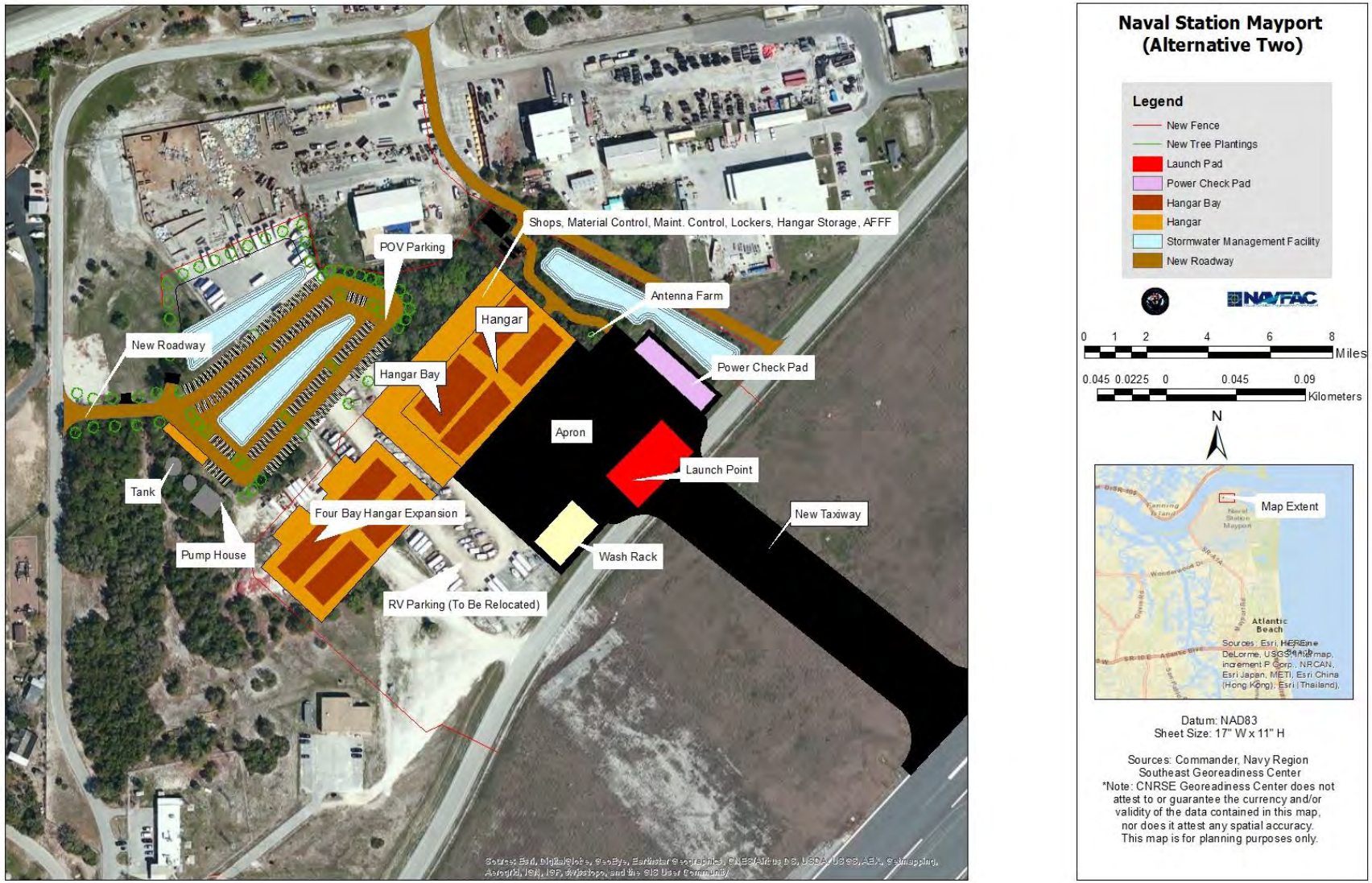

Figure 3-2. Proposed Locations of Key Infrastructure Elements

3.4 Demolition and Reconstruction Activities

Construction would require occupying an approximately ten acre site northwest of Runway 05/23. Use of this site by the Triton UAS facilities would require the relocation of the existing 4-acre Morale, Welfare & Recreation (MWR) Recreational Vehicle (RV) storage lot to an area northwest of the current long-term deployed parking area. The RV parking relocation site is located outside of wetlands, but would require an Explosive Safety Quantity-Distance (ESQD) waiver. The commercial vehicle inspection station may also need to be relocated, unless line of sight between the Triton UAS tower antenna and all of the runways and taxiways can be met without relocation of the inspection station.

3.5 Power Check Pad

The power check pad required to support the Triton UAS would be constructed southeast of the proposed hangar location and east of the parking apron. The power check pad (and blast shield) would be located on a paved area approximately 27,000 ft.^{2} (2,508 m^2) (180 ft. x 150 ft.).

3.6 Aircraft Wash Rack

The aircraft wash rack required to support the Triton UAS would contain the rinse water runoff from the Triton UAS. Under this alternative, construction of a new aircraft wash rack would be required. The wash rack would be located on a paved area south of the proposed hangar and aircraft parking apron in an area approximately 161 ft. x 78 ft. (12,558 ft^2), and would be tied into the installation's existing wastewater system.

3.7 Battery Storage Facility

A battery storage facility is required to store the Triton UAS batteries when they are not in use. At NS Mayport, an existing unused space is available for refurbishment in order to meet the battery storage facility requirement.

3.8 Other Storage and Supply

Storage and supply facilities are required to support the Triton UAS. At NS Mayport, Triton UAS storage and supply requirements are met through existing base supply. Furthermore, storage and supply needs are to be met through construction of the facility north of the hangar which will primarily house the maintenance control and mission control systems. The facility will additionally contain a vehicle garage, material control, lockers, hangar storage and fire suppression equipment.

3.9 Personnel

Approximately 400 Triton UAS personnel (officers, enlisted and contractors) would be stationed at NS Mayport. Assuming that new personnel would each be accompanied by an average of 1.3 family members, approximately 900 people would relocate to the neighborhoods and communities surrounding NS Mayport.

4. Listed Species, Potential Impacts, and Protective Measures

4.1 Listed Sea Turtles

Three species of sea turtles are known to nest on beaches in vicinity to NS Mayport: loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*) sea turtles.

Loggerhead sea turtles in the Northwest Atlantic Ocean distinct population segment (DPS), and green sea turtles in the North Atlantic DPS are federally listed as threatened; leatherback sea turtles are listed as endangered. While critical habitat has been designated for all three species, there is none located in the Action Area. Female sea turtles nest at night in early summer (typically, May to July). Hatchlings emerge from the nests at night in late summer (typically, July to October) and crawl to the water. Loggerhead sea turtles are the most frequent nesters of the three species in vicinity of NS Mayport. During the 2013 nesting season, a total 186 loggerhead sea turtle nests were counted at the beaches of NS Mayport, Huguenot Park, and Hanna Park, compared to only three green and three leatherback nests, respectively.

Noise created during construction, demolition, and renovation activities and Triton UAS flights may result in temporary behavioral disturbance, mostly limited to avoidance of the immediate project area. However, these minor changes in behavior are not expected differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated. Given the current level of air and ship traffic at the air station and the Triton UAS' relatively low SELs (87 decibels at 500 feet above ground level[2]), ongoing impacts to sea turtles in the vicinity would be negligible.

Once the hangar and supporting infrastructure are operational, there may be minor alterations to the location and intensity of lighting in the project area. Changes to existing lighting have the potential to impact nesting sea turtles, but based on the distance from the nesting areas to the project area, effects are expected to be insignificant and discountable. Further, the Navy would ensure, to the extent warranted and consistent with operational safety and security concerns, that lights installed for the Proposed Action adhere to the Florida Fish and Wildlife Conservation Commission (FWC) Approved Sea Turtle Lighting Guidelines. The use of appropriate lights and fixtures – to include the use of amber LED bulbs, limiting the height of fixtures when appropriate, and shielding bulbs to prevent direct light shining towards the beach and mitigate unnecessary sky glow – would ensure that the Proposed Action does not negatively affect nesting sea turtles and hatchlings. These measures would be incorporated into construction contract requirements to the maximum extent practicable.

Pursuant to the ESA, the Proposed Action may affect, but is not likely to adversely affect, nesting loggerhead, green, and leatherback sea turtles; and would have no effect on their critical habitat as none is located in the Action Area.

4.2 Listed Birds

Three species of ESA-listed birds potentially occur at NS Mayport: the piping plover (*Charadrius melodus*), red knot (*Calidris canutus* ssp. *rufa*), and wood stork (*Mycteria americana*); all are

[2] Modeled using a Cessna Citation X, which has the same basic Rolls-Royce AE 3007 engine.

currently classified as threatened. Only piping plovers have designated critical habitat; none is located in the Action Area.

Piping plovers overwinter in Florida, departing in March to April to return to their breeding and nesting habitat, which ranges from North Carolina through Canada. In Florida, piping plovers inhabit shoreline and dune ecosystems, foraging in the intertidal zone of beaches and estuaries. A seasonal colony of piping plovers occasionally occupies the northern extent of Mayport Beach during winter, in vicinity of the rock jetties.

Red knots migrate along the Florida coast in route from Argentina to the Canadian Arctic and back again. Flocks taking part in this migration typically stop in northeast Florida for a few days in March or April, although there is evidence that a subgroup of red knots overwinters in Florida from as early as November until as late as May. Like piping plovers, red knots inhabit shoreline and dune ecosystems, foraging in the intertidal zone of beaches and estuaries. Fall migrations back to Argentina appear to occur with fewer stopovers, resulting in fewer Florida sightings than in the spring. August is probably the most likely month to sight a red knot in northern Florida during the fall migration.

Wood storks breed and nest in northern Florida during the spring and summer. They build colonies of nests in trees, typically in isolated trees or wooded areas with open canopies near standing water. Wood storks lay eggs as early as March and the young usually fledge by August. Adults forage for small fish in standing fresh or brackish water. Nesting does not occur anywhere on NS Mayport, but wood storks may transit the installation and explore flooded ditches, shallow ponds, and marsh habitat for food.

As described above for sea turtles, potential impacts to ESA-listed birds would be limited to minor behavioral disturbance during construction. However, these changes in behavior are not expected differ appreciably from those resulting from naturally occurring phenomena and other stressors in the existing environment (e.g., severe weather events, evasion of predators, etc.) and no changes to feeding, sheltering, or reproduction are anticipated.

Additionally, the Navy's ongoing Bird Aircraft Strike Hazard (BASH) program would minimize potential for collisions with the Triton UAS.

Pursuant to the ESA, the Proposed Action may affect, but is not likely to adversely affect, piping plovers, red knots, and wood storks; and would have no effect on piping plover critical habitat as none is located in the Action Area.

DEPARTMENT OF THE NAVY
NAVAL STATION MAYPORT
P.O. BOX 280112
JACKSONVILLE, FLORIDA 32228-0112

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U.S. FISH AND WILDLIFE SERVICE
JACKSONVILLE, FLORIDA

FWS Log No 16-I-0375

The Proposed action is not likely to adversely affect resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) This finding fulfills the requirements of the Act.

for Jay B. Herrington
Field Supervisor

7/14/16
Date

Mr. Jay Herrington
Field Supervisor
U.S. Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Dear Mr. Herrington:

SUBJECT: EAST COAST HOME BASING OF MQ-4C TRITRON UNMANNED AIRCRAFT SYSTEM AT NAVAL STATION (NAVSTA) MAYPORT

The Navy proposes to provide facilities and functions to operate and maintain the MQ-4C Triton unmanned aircraft system (UAS) on the east cost of the U.S. in one of three locations currently under consideration. Naval Station (NAVSTA) Mayport is one of the three alternatives; the others are Naval Air Station (NAS) Key West in Florida and the Wallops Flight Facility on Virginia's Eastern Shore. Once evaluations are complete, construction on the home base facilities and infrastructure would begin in 2017 with operations projected to start in 2019.

The Navy has prepared a consultation package in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) to assess the potential effects on threatened and endangered species and their critical habitats from activities associated with the proposed action should NAVSTA Mayport be the location selected.

All federally-listed species that may occur in the Action Area were identified through a review of the NAVSTA Mayport Integrated Natural Resources Management Plan, biological survey reports, and the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) system. It was concluded that the Proposed Action may affect, but is not likely to adversely affect, nesting loggerhead, green, and leatherback sea turtles; wood storks; piping plovers; and red knots. Of these species, critical habitat has been designated for loggerhead, green, and leatherback sea turtles; and piping plovers. The Proposed Action would have no effect on their critical habitats because none are located in the Action Area.

The analysis of the potential effects of the Proposed Action contained in the enclosed biological assessment (BA) is based on a review of the proposed activities, current and historical distribution and occurrence data for each species, best management

APPENDIX B
FEDERAL COASTAL CONSISTENCY

DEPARTMENT OF THE NAVY
COMMANDER NAVY REGION SOUTHEAST
BOX 102, NAVAL AIR STATION
JACKSONVILLE, FLORIDA 32212-0102

5090
Ser N45/410
11 Jul 16

Mr. Chris Stahl
Florida State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Boulevard, M.S. 47
Tallahassee, FL 32399-3000

SUBJECT: COASTAL CONSISTENCY DETERMINATION FOR THE EAST COAST HOME BASING OF MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM AT NAVAL AIR STATION KEY WEST AND NAVAL STATION MAYPORT, FL

The Department of the Navy (Navy) proposes to home base four Triton UAS aircraft and support a maintenance hub for up to four additional Triton UAS at one of three alternative locations on the east coast. Two of these potential east coast home base locations are: Naval Air Station (NAS) Key West and Naval Station (NS) Mayport, Florida; the third potential site is located in Virginia at the NASA Wallops Flight Facility. Only one of these sites will be the Navy's east coast home base for the unmanned system.

An average of five Triton UAS flight operations (take-offs or landings) per day (1,825 annually) would occur. Demolition and construction activities to support the home basing are currently scheduled to begin in 2017, Triton UAS assets are scheduled to begin arriving in 2019, and steady state operations would be achieved in the 2023 timeframe. In total, up to 400 personnel and approximately 500 family members are associated with the proposed action. Personnel and their family members would gradually relocate to the surrounding area in phases, from 2019 to 2023. A project description is included as part of each Coastal Consistency Determination (CCD) (see enclosures 1 and 2).

In accordance with the Coastal Zone Management Act (CZMA) and Code of Federal Regulations [CFR], 15 CFR § 930.35, the Navy has prepared a CCD for NAS Key West (see enclosure 1) and NS Mayport (see enclosure 2) and is requesting coordination with the state of Florida concerning the potential affects to coastal resources within each of the Florida project areas.

Based on the information and analysis presented in each enclosed CCD and associated project description, the Navy has determined that the proposed action at both NAS Key West and at NS Mayport will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the federally approved Florida Coastal Management Program. In accordance with 15 CFR § 930.41, the State of Florida has 60 days from receipt of this document in which to concur with or object to this CCD or request an extension. Florida's concurrence will be presumed if a response is not received by the Navy within 60 days from receipt of the CCD.

5090
Ser N45/410
11 Jul 16

If further information is required or for questions regarding this letter, please contact Mr. Brock Durig, N40 CNRSE Ops Support at commercial phone (904) 542-6966 or email: william.durig@navy.mil. Thank you for your assistance regarding this matter.

Sincerely,

C. R. DESTAFNEY, PE
Region Environmental Director
By direction
of the Commander

Enclosures: 1. NAS Key West, Coastal Consistency Determination
2. NS Mayport, Coastal Consistency Determination

Copy to:
USFF (N465)
NAS Key West (N45)
NS Mayport (N45)
NAVFAC LANT N45

COASTAL CONSISTENCY DETERMINATION FOR THE HOME BASING OF MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM NAVAL AIR STATION KEY WEST, FLORIDA

Introduction

This document provides the State of Florida with the U.S. Department of the Navy's (Navy) Consistency Determination under Section 307(c)(1) of the Coastal Zone Management Act (CZMA) of 1972, as amended, and 15 Code of Federal Regulations part 930, Subpart C, for the Navy's proposal to operate and maintain the MQ-4C Triton Unmanned Aircraft System (Triton UAS) on the East Coast. To fulfill the proposed action, the Navy identified three alternatives: Alternative 1 at Naval Air Station (NAS) Key West and Alternative 2 at Naval Station Mayport in Florida, and Alternative 3 at the National Aeronautics and Space Administration's Wallops Flight Facility in Virginia. This document addresses Alternative 1 at NAS Key West, Boca Chica Airfield, which is located in Monroe County, Florida.

This CZMA Coastal Consistency Determination addresses the proposed action evaluated by the Navy and as described below and in the supporting Figure 1 and Table 1. After careful consideration, the Navy has determined that the proposed action will be undertaken in a manner consistent, to the maximum extent practicable, with the applicable enforceable polices of the Florida Coastal Management Program (FCMP).

Proposed Federal Agency Action

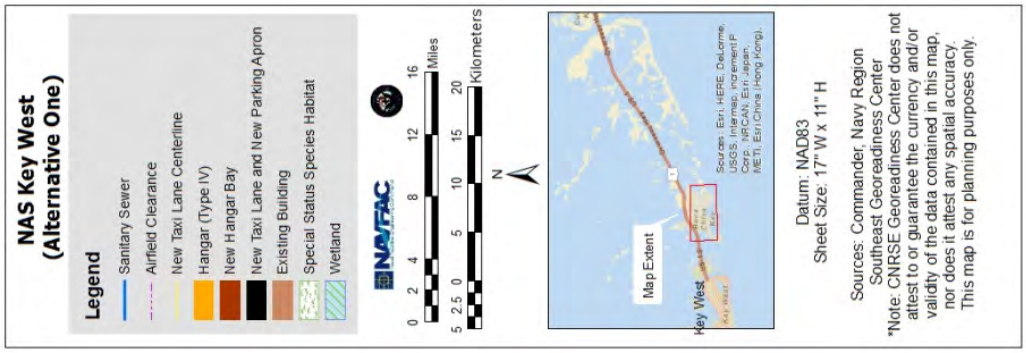
The Navy proposes to home base four Triton UAS aircraft and support a maintenance hub for up to four additional Triton UAS. An average of five Triton UAS flight operations (take-offs or landings) per day (1,825 annually) would occur. Demolition and construction activities to support the home basing are currently scheduled to begin in 2017, Triton UAS assets are scheduled to begin arriving in 2019, and steady state operations would be achieved in the 2023 timeframe. In total, up to 400 personnel and approximately 500 family members are associated with the proposed action. Personnel and their family members would gradually relocate to the surrounding area in phases, from 2019 to 2023.

Project Location

NAS Key West comprises approximately 6,500 acres of land distributed over several properties located in the Florida Keys, Monroe County, Florida. The approximate 4,700-acre Boca Chica Airfield is NAS Key West's primary site. The airfield is located on Boca Chica Key, approximately 5 miles east of the city of Key West (Figure 1).

Proposed Action Description

Approximately 21 acres in the industrialized area at Boca Chica Airfield would be developed to support the home basing action: 16 acres of already disturbed/developed lands (i.e., graveled and paved areas), up to 2 acres of maintained vegetation, and up to 3 acres of wetlands. Construction would occur adjacent to the taxiways/runways and along the Boca Chica Road right-of-way (Figure 1). Several project components were identified to support the home basing of the Triton UAS at NAS Key West and are identified in Table 1.



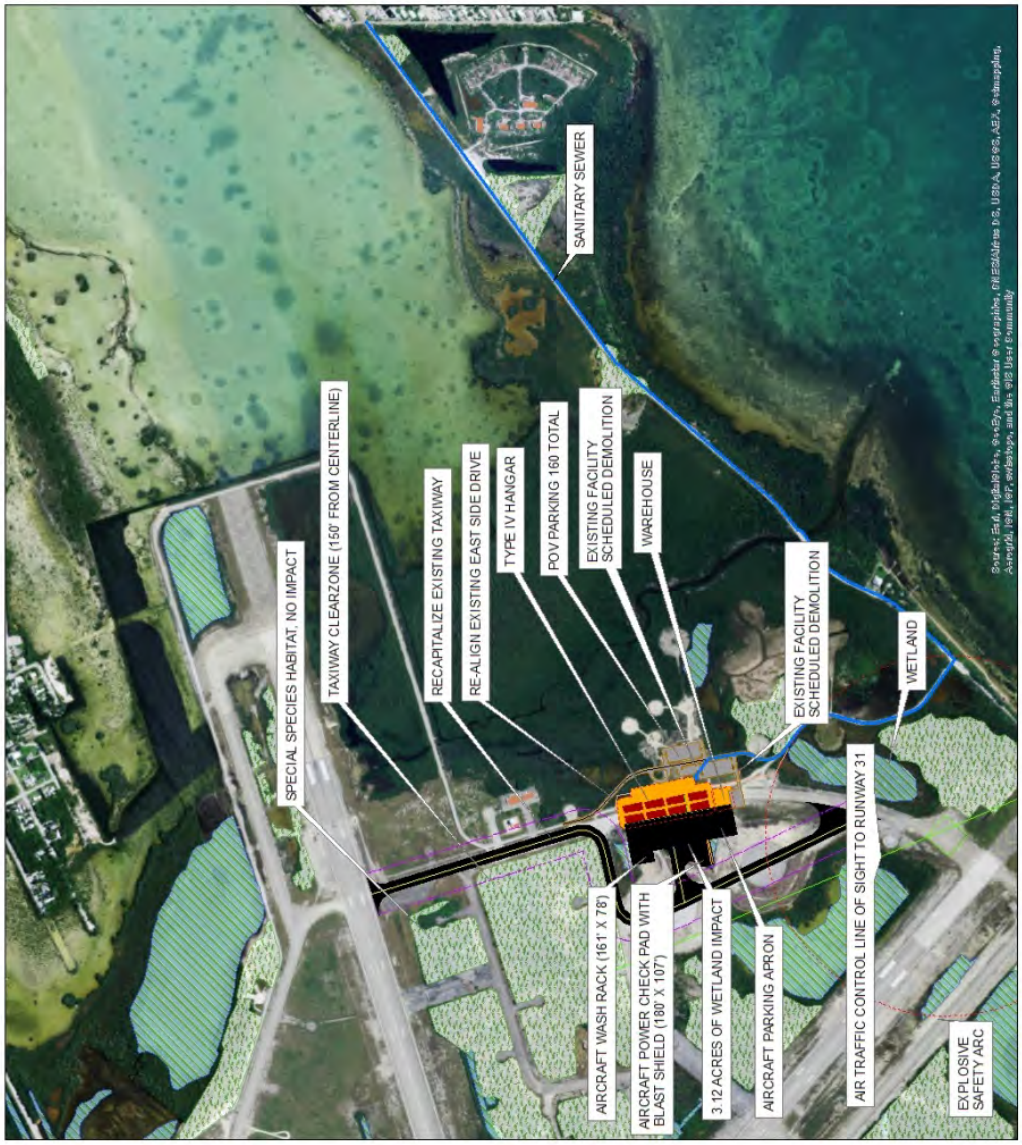


Figure 1 Naval Air Station Key West Proposed Construction and Infrastructure Improvements

Table 1 Naval Air Station Key West Proposed Project Components for the Triton Unmanned Aircraft System Home Basing

Description	***Project Size***	***Project Detail***
Hangar	150,000 square feet	Maintenance facility with capacity to accommodate eight Triton UAS aircraft
Aircraft parking apron, vehicle access road, sanitary sewer line, privately-owned vehicle parking lot, and realignment of East Side Drive	6 acres	Parking for up to eight Triton UAS aircraft, access road to existing taxiway, installation of an underground sanitary sewer line along existing roads, as well as access and parking lot for aircraft maintainers and operators
Sanitary Sewer Line	8,400 linear feet	The line would travel from the main administrative building, follow the southern portion of East Side Drive, and then travel northeast along the existing Boca Chica Road to the closest Florida Keys Aqueduct Authority lift station. Ground disturbance would be limited to the paved road and immediately adjacent vegetated areas (i.e., road shoulder)
Aircraft wash rack	12,558 square feet	Wash rack located on paved area west of hangar
Demolish Building A1004 and A1005	Not Applicable	Buildings that were already scheduled for demolition would be removed to accommodate a parking lot for Triton UAS personnel

NAS Key West would incorporate pollution prevention, energy, and water conservation and water quality initiatives into all facilities and activities where practicable. The objectives of the initiatives would be to improve waste reduction and management practices; energy efficiency and energy conservation practices; water resource conservation and management; and recycling and reuse practices. When applicable, waste generated during construction would be recycled according to the type of material.

Permitting and Environmental Assessment

Prior to implementation of Alternative 1, the Navy would obtain permit coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities from the Florida Department of Environmental Protection (FDEP) for the proposed construction activities. The Navy would select, install, and maintain effective erosion- and sediment-control measures as identified and as necessary to comply with the Construction General Permit. In addition, under the Construction General Permit, the Navy would develop a site-specific Storm Water Pollution Prevention Plan (SWPPP) for the proposed construction activities. The SWPPP would describe and ensure implementation of practices that would reduce pollutants in stormwater discharges into the Atlantic Ocean and prevent violations of applicable regulations and standards.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), the Navy is consulting with the State Historic Preservation Officer (SHPO) regarding potential effects of the proposed construction action on historic properties. There are no archaeological sites located within or near the construction footprint and no traditional cultural properties or sacred sites have been identified at NAS Key West. Buildings A1004 and A1005 are proposed for demolition to accommodate personnel parking associated with the Triton UAS mission. Building A1004 is a communications/receiver building constructed in 1946.

The building was surveyed in 1995 by the U.S. Army Corps of Engineers and was determined ineligible to the National Register of Historic Places (NRHP) with SHPO concurrence. Building A1005 is a shredder/incinerator facility constructed in 1946. The building has been unutilized for many years and was surveyed in conjunction with this proposed action. The building exhibits no qualifying characteristics under criteria A-D and has been recommended ineligible to the NRHP. The Navy contends that buildings A1004 and A1005 do not constitute historic properties and that their demolition warrants a finding of "No Historic Properties Affected."

The Navy entered into consultation with the U.S. Fish and Wildlife Service (USFWS) South Florida Ecological Services Field Office regarding potential impacts to threatened and endangered species from implementing Alternative 1 at NAS Key West. The Navy prepared a biological assessment for the following listed species: Lower Keys Marsh Rabbit (LKMR); American crocodile; silver rice rat; nesting green, hawksbill, leatherback, and loggerhead sea turtles; roseate terns; piping plovers; and red knots.

Pursuant to the Endangered Species Act (ESA), implementing the proposed action at NAS Key West:

- may affect, but is not likely to adversely affect the LKMR;
- may affect, but is not likely to adversely affect American crocodiles and would have no effect on critical habitat;
- may affect, but is not likely to adversely affect silver rice rats and would have no effect on critical habitat;
- may affect, but is not likely to adversely affect nesting green, hawksbill, leatherback, and loggerhead sea turtles or their hatchlings and would have no effect on critical habitat; and
- may affect, but is not likely to adversely affect piping plovers, red knots, and roseate terns.

Background

The CZMA, enacted in 1972, created the National Coastal Management Program for management and control of the uses of and impacts on coastal zone resources. The program is implemented through federally approved state coastal management programs (CMPs). Federal approval of a state CMP triggers the CZMA Section 307 federal consistency determination requirement.

Section 307 mandates that federal actions within a state's coastal zone (or outside the coastal zone if the action affects land or water uses or natural resources within the coastal zone) be consistent to the maximum extent practicable with the enforceable policies of the state CMP. A federal agency considering actions that may impact waters governed by the CZMA uses these requirements to ensure compliance with the state's federally-approved CMP. Federal agency actions include direct and indirect federal agency activities, federal approval activities, and federal financial assistance activities. Accordingly, federal agency activities (direct, indirect, or cumulative) reasonably affecting the state's coastal zone must be fully consistent with the enforceable policies of the state's CMP, unless compliance is otherwise prohibited by law. There are no categorical exemptions or exclusions to or from the Section 307 federal consistency requirement.

The Florida CMP (FCMP), approved by the National Oceanic and Atmospheric Administration in 1981, manages over 8,000 miles of coastline through the authority granted by the Florida Legislature in 24 different statutes. This network of statutes is administered by nine state agencies, including all of the water management districts, throughout the state of Florida. Each FCMP agency must ensure that federal activities comply with the requirements of the specific FCMP statutes and authorities within its jurisdiction. The FCMP includes enforceable policies that ensure the wise use and protection of the state's water, cultural, historic, and biological resources; minimize the state's vulnerability to coastal

hazards; ensure compliance with the state's growth management laws; protect the state transportation system; and protect the state's proprietary interest as the owner of sovereignty submerged lands.

The first step in the CZMA federal consistency process is to determine whether the proposed action would have a reasonably foreseeable direct, indirect, or cumulative effect on a state's coastal uses or resources (Chief of Naval Operations Instruction [OPNAVINST] M-5090.1). This is called an "effects test." After conducting an effects test, the Navy determined that Alternative 1 at NAS Key West may result in reasonably foreseeable direct, indirect, or cumulative effects on Florida's coastal uses or resources; therefore, the Navy has prepared this consistency determination.

Florida/Coastal Policy Assessment

In accordance with the CZMA, the Navy has reviewed the FCMP and associated enforceable policies. Based on this review, the Navy has determined that Alternative 1 at NAS Key West is either fully consistent or consistent to the maximum extent practicable with the FCMP. This section discusses how the Triton UAS home basing Alternative 1 proposed project is consistent with the Florida statutes that are included in the FCMP as enforceable policies and are relevant to this action. Additional statutes that are incorporated as enforceable policies of the FCMP but are not applicable to implementing Alternative 1, are excluded from detailed analysis in this Federal Consistency Determination. Table 2 provides a summary of the statutes that are not applicable.

Table 2 Florida Coastal Management Program Statutes Not Applicable to Alternative 1 of the Proposed Action

Statute	*Scope*	*Explanation of Non-Applicability*
Chapter 161 Beach and Shore Preservation	Provides policy for the regulation of construction, reconstruction, and other physical activities related to the beaches and shores of the state. Additionally, this statute requires the restoration and maintenance of critically eroding beaches.	Alternative 1, NAS Key West would not include construction within or adjacent to any beach or shoreline regulated by the Coastal Construction Permit Program, the Coastal Construction Control Line (CCCL) Permit Program, or the Coastal Zone Protection Program, and would not affect shorelines or shoreline processes.
Chapter 163, Part II – Growth Policy; County and Municipal Planning; Land Development Regulation	Chapter 163 provides for the implementation of comprehensive planning programs to guide and control future development in the state.	Alternative 1, NAS Key West would have no effect on local, state, or regional plans or programs for future development in the state.
Chapter 186 State and Regional Planning	Chapter 186 provides basic policy direction to all levels of government regarding the orderly social, economic, and physical growth of the state.	Alternative 1, NAS Key West would not have a negative effect on state plans for water use, land development, or transportation.
Chapter 252 – Emergency Management	Directs the state to reduce the vulnerability of its people and property to natural and man-made disasters; prepare for, respond to, and reduce the impacts of disasters; and decrease the time and resources needed to recover from disasters.	Alternative 1, NAS Key West would not affect the state's emergency planning and response efforts, evacuation procedures, or flood-control procedures.

Table 2 Florida Coastal Management Program Statutes Not Applicable to Alternative 1 of the Proposed Action

Statute	***Scope***	***Explanation of Non-Applicability***
Chapter 253 – State Lands	Provides the basis for the acquisition, administration, management, control, supervision, conservation, protection, and disposition of all lands owned by the state.	Alternative 1, NAS Key West would occur on federal property and would have no effect on state lands.
Chapter 258, 259, 260, and 375 – State Parks and Preserves, Land Acquisition for Conservation or Recreation, Florida Greenways and Trails Act, Outdoor Recreation and Conservation Lands	Chapter 258 addresses the state's administration of state parks, aquatic preserves, and recreation areas to ensure conservation of these properties. Chapter 259 addresses acquisition and management of lands to maintain the state's unique natural resources; protect air, land, and water quality; promote water resource development; promote restoration activities on public lands; and provide lands for natural resource based recreation. Chapter 260 establishes a statewide system of greenways and trails in order to conserve, develop, and use the natural resources of Florida for healthful and recreational purposes. Chapter 375 addresses the development of a comprehensive outdoor recreation plan.	No state parks, state trails, state aquatic preserves, or wild and scenic river segments would be affected by Alternative 1, NAS Key West, and opportunities for recreation on state lands would not be affected.
Chapter 267 – Historical Resources	Addresses management and preservation of the state's archaeological and historical resources.	As further described on pages 3 and 4 herein, Alternative 1, NAS Key West would not affect cultural resources managed by the State of Florida, as no such sites have been identified within the Project footprint. However, should any cultural resources that are managed by the State of Florida be discovered during construction, the activity would cease and the discovery would be immediately reported to the installation Environmental Director and the Florida State Historic Preservation Officer.
Chapter 288 – Commercial Development and Capital Improvements	Establishes the framework to promote and develop general business, trade, and tourism components of the state economy.	Alternative 1, NAS Key West would not affect the natural, coastal, historical, or cultural tourism assets of the state, or affect the development of nature-based tourism and recreation.

Table 2 Florida Coastal Management Program Statutes Not Applicable to Alternative 1 of the Proposed Action

Statute	***Scope***	***Explanation of Non-Applicability***
Chapter 334, 339 – Transportation Administration, Transportation Finance and Planning	Chapter 334 addresses the state's policy concerning transportation administration. Chapter 339 addresses the finance and planning needs of the state's transportation system.	Alternative 1, NAS Key West would not affect the administration of the state's transportation system, or the finance and planning of the state's transportation system.
Chapter 377 – Energy Resources	Addresses regulation, planning, and development of oil and gas resources of the state.	Energy resource production, including oil and gas, and the transportation of oil and gas, would not be affected by Alternative 1, NAS Key West.
Chapter 380 – Land and Water Management	Establishes land and water management policies to protect natural resources and the environment, and to guide and coordinate local decisions relating to growth and development.	Development of state lands with regional (i.e. more than one county) impacts would not occur. No changes to coastal infrastructure such as capacity increases of existing coastal infrastructure, or use of state funds for infrastructure planning, designing or construction would occur.
Chapter 381 – Public Health, General Provisions	Establishes public policy concerning the state's public health system, which is designated to promote, protect, and improve the health of all people in the state.	Alternative 1, NAS Key West does not involve the construction of an on-site sewage or treatment system. Implementing this alternative would not affect the state's policy concerning the public health system.
Chapter 388 – Mosquito Control	Describes the policy to conduct mosquito control in a manner consistent with protection of the environmental and ecological integrity of lands and waters throughout the state.	Alternative 1, NAS Key West would not further propagation of mosquitoes or affect mosquito control efforts.
Chapter 553 – Building and Construction Standards	Addresses building construction standards and provides for a unified Florida Building Code.	Alternative 1, NAS Key West construction and renovations are not subject to the provisions of the Florida Building Code.
Chapter 597 – Aquaculture	Establishes public policy concerning the cultivation of aquatic organisms in the state.	Aquaculture facilities would not be constructed, and aquatic resources supporting aquaculture activities would not be affected.

Enforceable Policies Applicable to Implementing the Proposed Action

Chapter 373 – Water Resources

This statute addresses sustainable water management; the conservation of surface and ground waters for full beneficial use; the preservation of natural resources, fish, and wildlife; protecting public land; and promoting the health and general welfare of Floridians.

Alternative 1, NAS Key West would be conducted in a manner consistent with Chapter 373. Any applicable permitting requirements would be satisfied in accordance with 62-25 Florida Administrative

Code (FAC) and NPDES. NAS Key West would submit a notice of intent to use the generic permit for stormwater discharge under the NPDES program prior to project initiation according to Section 403.0885, Florida Statutes. Alternative 1, NAS Key West would also require coverage under the generic permit for stormwater discharge from construction activities that disturb one or more acres of land (FAC 62-621).

Approximately 5 acres of impervious surfaces would be added at NAS Key West. To reduce stormwater runoff, retention structures would be provided to collect stormwater from the newly developed area. These stormwater retention structures would be designed, through size and depth of the retaining areas and the manner in which it drains to the system, to discharge no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Construction practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. Stormwater best management practices and standard operating procedures would continue to be used for erosion and sediment control; these procedures are detailed in the NAS Key West SWPPP.

Approximately 3 acres of estuarine wetland habitat would be impacted. Impacts would be mitigated in accordance with the Clean Water Act section 404 permitting process. Prior to any ground disturbing activities, the wetlands will be surveyed and delineated. Once the wetland functions have been determined and concurrence gained from the U.S. Army Corps of Engineers, the Navy would replace, restore, purchase wetland credits from a mitigation bank, or pay an in lieu fee for the types and amounts of wetlands impacted.

The Navy has determined that Alternative 1, NAS Key West is fully consistent with this policy.

Chapter 376 – Pollution Discharge Prevention and Removal

This statute provides a framework for the protection of the state's coastline from spills, discharges, and releases of pollutants. The discharge of pollutants into or upon any coastal waters, estuaries, tidal flats, beaches, and lands adjoining the seacoast of the state is prohibited.
The statute:

- Provides for hazards & threats of danger and damages resulting from any pollutant discharge to be evaluated
- Requires the prompt containment and removal of pollution; provides penalties for violations
- Ensures the prompt payment of reasonable damages from a discharge.

Alternative 1, NAS Key West would be conducted in a manner consistent with Chapter 376. All required permits would be procured, and established procedures for transport, storage, and handling of hazardous materials would be followed. The Navy does not anticipate the discharge of any pollutants in the marine environment or upon surface or ground waters. In the event of a spill, a written Spill Prevention, Control, and Countermeasure Plan would be followed. BMPs would be incorporated to minimize impacts on water quality.

The Navy has determined that Alternative 1, NAS Key West is fully consistent with this policy.

Chapter 379 – Fish and Wildlife Conservation

This statute establishes the framework for the management and protection of Florida's wide diversity of fish and wildlife resources. It is Florida's policy to conserve and wisely manage these resources. Particular attention is given to those species defined as being endangered or threatened.

The federal-endangered LKMR has been observed within the proposed project area. To minimize impacts to the LKMR, the construction area would be searched each day before work begins and an observer would be stationed to walk ahead of moving construction equipment in areas where ground cover may conceal an LKMR. An increase in traffic in/around the construction area and once Triton UAS flight operations have started would also increase the potential for vehicle collisions and physical injury to federally protected species, primarily the LKMR. The Navy is consulting with the USFWS South Florida Ecological Services Field Office regarding potential impacts to the LKMR. The Navy determined that Alternative 1, NAS Key West may affect, but is not likely to adversely affect the LKMR.

Other federally protected species have been observed on NAS Key West; however, their expected occurrence within the project area would be rare or extralimital. These other federally protected species include: American crocodile; silver rice rat; nesting loggerhead, green, hawksbill and leatherback sea turtles; roseate terns; piping plovers; and red knots. The Navy determined that Alternative 1, NAS Key West may affect, but is not likely to adversely affect these protected species.

The Navy determined that Alternative 1, NAS Key West is consistent to the maximum extent practicable with this policy.

Chapter 403 – Environmental Control

This statute establishes public policy concerning environmental control in the state and authorizes the regulation of pollution of the air and waters.

Alternative 1, NAS Key West would be conducted in a manner consistent with Chapter 403. This includes implementation of appropriate best management practices for erosion and sediment control, along with practices to prevent spills if petroleum products are temporarily stored on site during construction. Alternative 1, NAS Key West would not significantly affect fish, wildlife, or critical habitats. Approximately 3 acres of estuarine wetland habitat would be impacted; however, these impacts would be mitigated to insignificance through adherence to the section 404 permitting process. Work would be conducted under FDEP permits as described in the discussion for Chapter 373. Surface waters of the state would not be significantly affected by the project. Construction and demolition activities are not anticipated to degrade the water quality or affect beneficial uses of surface water or groundwater resources. No significant impacts to local or regional air quality would be expected from implementing Alternative 1, NAS Key West; Monroe County would remain in attainment for all criteria pollutants.

The Navy has determined that Alternative 1, NAS Key West is fully consistent with this policy.

Chapter 582 – Soil and Water Conservation

This statute provides for the control and prevention of soil erosion. It is Florida's policy to preserve natural resources; control and prevent soil erosion; prevent floodwater and sediment damages; and further the conservation, development, and use of soil and water resources, and the disposal of water. Land use policies are evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and use soil and water resources on site or in adjoining properties.

Alternative 1, NAS Key West would be conducted in a manner consistent with Chapter 582. This includes implementation of appropriate best management practices for erosion and sediment control. Construction practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. The Navy would develop a SWPPP for the proposed construction activities prior to implementing the alternative. The SWPPP would describe and ensure implementation of practices that would reduce

pollutants in stormwater discharges into the Atlantic Ocean and prevent violations of applicable regulations and standards.

The Navy has determined that Alternative 1, NAS Key West is fully consistent with this policy.

Summary

The Navy has determined that Alternative 1, NAS Key West would be fully consistent with the enforceable policies of Chapters 373, 376, 403, and 582 of the FCMP.

The Navy has determined that Alternative 1, NAS Key West would be consistent to the maximum extent practicable with the enforceable policy of Chapter 379 of the FCMP.

COASTAL CONSISTENCY DETERMINATION FOR THE HOME BASING OF MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM NAVAL STATION MAYPORT, FLORIDA

Introduction

This document provides the State of Florida with the U.S. Department of the Navy's (Navy) Consistency Determination under Section 307(c)(1) of the Coastal Zone Management Act (CZMA) of 1972, as amended, and 15 Code of Federal Regulations part 930, Subpart C, for the Navy's proposal to operate and maintain the MQ-4C Triton Unmanned Aircraft System (Triton UAS) on the East Coast. To fulfill the proposed action, the Navy identified three alternatives: Alternative 1 at Naval Air Station Key West and Alternative 2 at Naval Station (NS) Mayport in Florida, and Alternative 3 at the National Aeronautics and Space Administration's Wallops Flight Facility in Virginia. This document addresses Alternative 2 at NS Mayport, which is located in Duval County, Florida.

This CZMA Coastal Consistency Determination addresses the proposed action evaluated by the Navy and as described below in the project description and the supporting Figure 1 and Table 1. After careful consideration, the Navy has determined that the proposed action will be undertaken in a manner consistent, to the maximum extent practicable, with the applicable enforceable polices of the Florida Coastal Management Program (FCMP).

Proposed Federal Agency Action

The Navy proposes to home base four MQ-4C Triton UAS aircraft and support a maintenance hub for up to four additional Triton UAS. An average of five Triton UAS flight operations (take-offs or landings) per day (1,825 annually) would occur. Demolition and construction activities to support the home basing are currently scheduled to begin in 2017, Triton UAS assets are scheduled to begin arriving in 2019, and steady state operations would be achieved in the 2023 timeframe. In total, up to 400 personnel and approximately 500 family members are associated with the proposed action. Personnel and their family members would gradually relocate to the surrounding area in phases, from 2019 to 2023.

Project Location

NS Mayport is located 15 miles east of Jacksonville, Florida, on approximately 3,409 acres at the mouth of the St. Johns River in Duval County (Figure 1).

Proposed Action Description

Approximately 25 acres at the existing airfield would be developed to support the home basing action: 10 acres of already disturbed/developed lands (i.e., graveled or paved areas) and 15 acres of vegetated or forested areas. Construction would occur adjacent to the runway in an already industrialized area (Figure 1). To support development in this area, an existing long-term recreational vehicle and boat storage lot would be relocated (Figure 2). Several project components were identified to support the home basing of the Triton UAS at NS Mayport and are listed in Table 1.

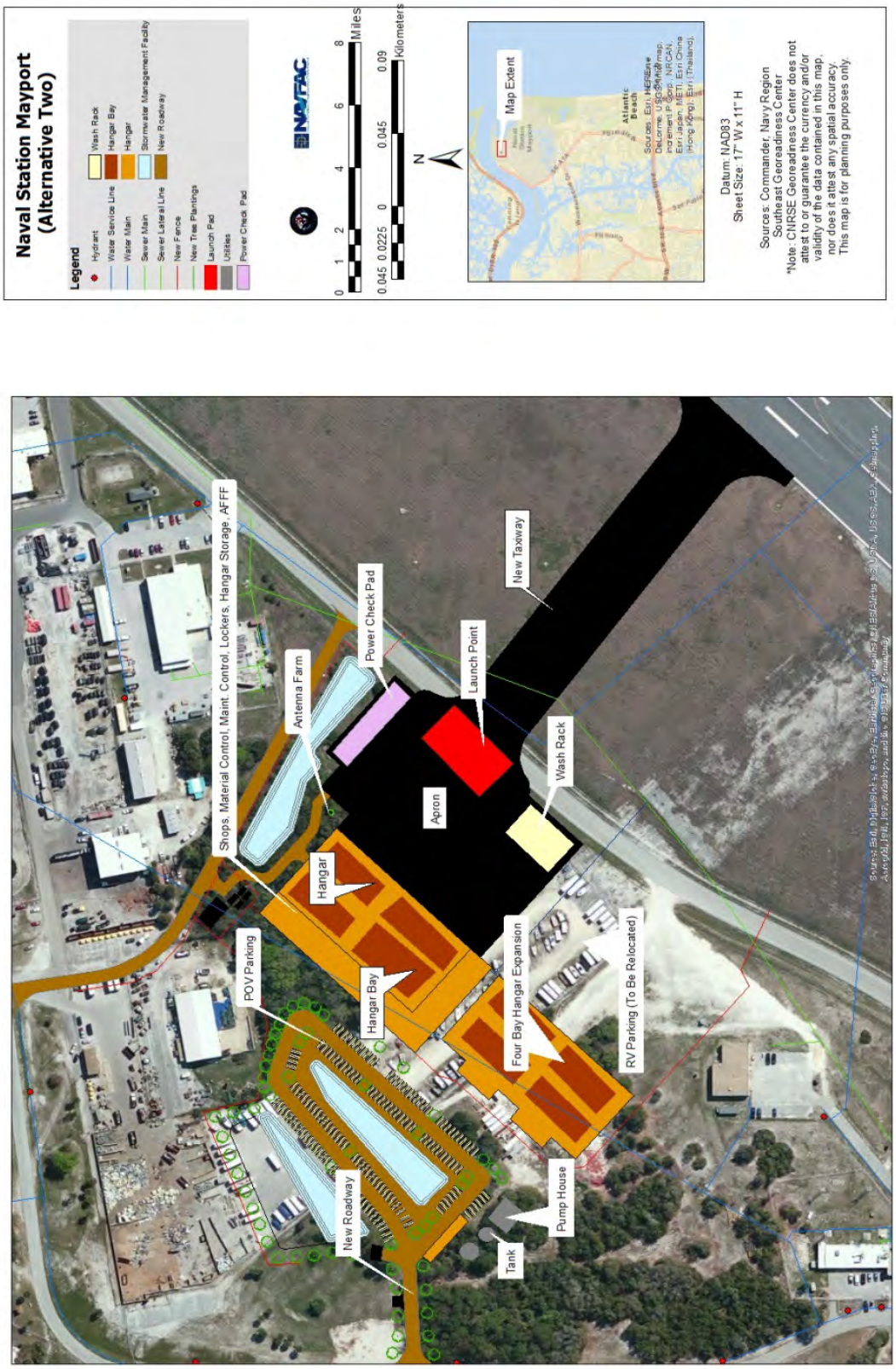


Figure 1 Naval Station Mayport Proposed Construction and Infrastructure Improvements

Figure 2 Naval Station Mayport Proposed Long-Term Storage Relocation

Table 1 Naval Station Mayport Proposed Project Components for the Triton Unmanned Aircraft System Home Basing

Description	***Project Size***	***Project Detail***
Hangar	150,000 square feet	Maintenance facility with capacity to accommodate eight Triton UAS aircraft
Aircraft parking apron, vehicle access road to Patrol Road, privately-owned vehicle parking lot, realignment of Patrol Road, and runway access	5 acres	Parking for up to eight Triton UAS aircraft, access road and parking lot for aircraft personnel, and runway access from hangar
Aircraft wash rack	12,558 square feet	Wash rack located on paved area

Table 1 Naval Station Mayport Proposed Project Components for the Triton Unmanned Aircraft System Home Basing

Description	*Project Size*	*Project Detail*
Develop an area of planted slash pine for long-term storage relocation	10 acres	Adherence to the station's Forest Management Plan mitigations, whereby other dead, dying, or diseased trees would be replaced, would ensure that there are no significant effects to on-station forested areas

NS Mayport would incorporate pollution prevention, energy, and water conservation and water quality initiatives into all facilities and activities where practicable. The objectives of the initiatives would be to improve waste reduction and management practices; energy efficiency and energy conservation practices; water resource conservation and management; and recycling and reuse practices. When applicable, waste generated during construction would be recycled according to the type of material.

Permitting and Environmental Assessment

Prior to implementation of Alternative 2 at NS Mayport, the Navy would obtain permit coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities from the Florida Department of Environmental Protection (FDEP) for the proposed construction activities. The Navy would select, install, and maintain effective erosion- and sediment-control measures as identified and as necessary to comply with the Construction General Permit. In addition, under the Construction General Permit, the Navy would develop a site-specific Storm Water Pollution Prevention Plan (SWPPP) for the proposed construction activities. The SWPPP would describe and ensure implementation of practices that would reduce pollutants in stormwater discharges into the Atlantic Ocean and prevent violations of applicable regulations and standards.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), the Navy is consulting with the State Historic Preservation Office (SHPO) regarding potential effects of the proposed action on historic properties.-The St. Johns Lighthouse (Site 8DU296) is in the National Register of Historic Places (NRHP). The lighthouse is located approximately 580 feet from the southern edge of proposed construction. The APE is indicated in pink in Figure 3. Under this alternative, construction would not affect the site or viewshed of the lighthouse, and the 1-decibel Day-Night Average Sound Level increase associated with the UAS flights would not incur acoustic effects on the structure.

Figure 3 Naval Station Mayport Area of Potential Effects

A surface inspection of the project APE was conducted on December 17, 2015. Archaeologists observed evidence of significant disturbance on undeveloped

portions of land throughout the APE and concluded that this was the product of original runway construction and ongoing runway/grounds maintenance over the past 70 years. Given observed site conditions and a review of historical U.S. Geological Survey maps, the Navy concluded that there is a low probability that intact archeological resources will be identified in the course of the Triton UAS project. No archaeological sites are identified in the APE and no traditional cultural properties or sacred sites have been identified at NS Mayport. As a result of archaeological survey, site inspection, and historic map review, the Navy has concluded that the proposed action at NS Mayport warrants a finding of "No Historic Properties Affected."

The Navy entered into consultation with the U.S. Fish and Wildlife Service (USFWS) Jacksonville, Florida Field Office regarding potential impacts to threatened and endangered species from implementing the proposed action at NS Mayport. The Navy prepared a biological assessment for the following listed species: nesting loggerhead, green, and leatherback sea turtles; wood storks; piping plovers; and red knots.

Pursuant to the Endangered Species Act (ESA), implementing the proposed action at NS Mayport:

- may affect, but is not likely to adversely affect, nesting leatherback and loggerhead sea turtles and would have no effect on their critical habitat;
- may affect, but is not likely to adversely affect, wood storks and red knots;
- may affect, but is not likely to adversely affect, piping plovers and would have no effect on their critical habitat (as no critical habitat is located in the action area)

Background

The CZMA, enacted in 1972, created the National Coastal Management Program for management and control of the uses of and impacts on coastal zone resources. The program is implemented through federally approved state coastal management programs (CMPs). Federal approval of a state CMP triggers the CZMA Section 307 federal consistency determination requirement.

Section 307 mandates that federal actions within a state's coastal zone (or outside the coastal zone if the action affects land or water uses or natural resources within the coastal zone) be consistent to the maximum extent practicable with the enforceable policies of the state CMP. A federal agency considering actions that may impact waters governed by the CZMA uses these requirements to ensure compliance with the state's federally approved CMP. Federal agency actions include direct and indirect federal agency activities, federal approval activities, and federal financial assistance activities. Accordingly, federal agency activities (direct, indirect, or cumulative) reasonably affecting the state's coastal zone must be fully consistent with the enforceable policies of the state's CMP, unless compliance is otherwise prohibited by law. There are no categorical exemptions or exclusions to or from the Section 307 federal consistency requirement.

The Florida CMP (FCMP), approved by the National Oceanic and Atmospheric Administration in 1981, manages over 8,000 miles of coastline through the authority granted by the Florida Legislature in 24 different statutes. This network of statutes is administered by nine state agencies, including all of the water management districts, throughout the state of Florida. Each FCMP state agency must ensure that federal activities comply with the requirements of the specific FCMP statutes and authorities within its jurisdiction. The FCMP includes enforceable policies that ensure the wise use and protection of the state's water, cultural, historic, and biological resources; minimize the state's vulnerability to coastal hazards; ensure compliance with the state's growth management laws; protect the state transportation system; and protect the state's proprietary interest as the owner of sovereignty submerged lands.

The first step in the CZMA federal consistency process is to determine whether the proposed action would have a reasonably foreseeable direct, indirect, or cumulative effect on a state's coastal uses or resources (Chief of Naval Operations Instruction [OPNAVINST] M-5090.1). This is called an "effects test." After conducting an effects test, the Navy determined that the proposed action may result in reasonably foreseeable direct, indirect, or cumulative effects on Florida's coastal uses or resources; therefore, the Navy has prepared this consistency determination.

Florida/Coastal Policy Assessment

In accordance with the CZMA, the Navy has reviewed the FCMP and associated enforceable policies. Based on this review, the Navy has determined that Alternative 2 at NS Mayport is either fully consistent or consistent to the maximum extent practicable with the FCMP. This section discusses how the Triton UAS home basing Alternative 2 proposed project is consistent with the Florida statutes that are included in the FCMP as enforceable policies and are relevant to this action. Additional statutes that are incorporated as enforceable policies of the FCMP are not applicable to the proposed action and are excluded from detailed analysis in this Federal Consistency Determination. Table 2 provides a summary of the statutes that are not applicable.

Table 2 Florida Coastal Management Program Statutes Not Applicable to Alternative 2 of the Proposed Action

Statute	***Scope***	***Explanation of Non-Applicability***
Chapter 161 **Beach and Shore Preservation**	Provides policy for the regulation of construction, reconstruction, and other physical activities related to the beaches and shores of the state. Additionally, this statute requires the restoration and maintenance of critically eroding beaches.	Alternative 2, NS Mayport would not include construction within or adjacent to any beach or shoreline regulated by the Coastal Construction Permit Program, the Coastal Construction Control Line (CCCL) Permit Program, or the Coastal Zone Protection Program, and would not affect shorelines or shoreline processes.
Chapter 163, Part II – Growth Policy; County and Municipal Planning; Land Development Regulation	Chapter 163 provides for the implementation of comprehensive planning programs to guide and control future development in the state.	Alternative 2, NS Mayport would have no effect on local, state, or regional plans or programs for future development in the state.
Chapter 186 **State and Regional Planning**	Chapter 186 provides basic policy direction to all levels of government regarding the orderly social, economic, and physical growth of the state.	Alternative 2, NS Mayport would not have a negative effect on state plans for water use, land development, or transportation.
Chapter 252 – Emergency Management	Directs the state to reduce the vulnerability of its people and property to natural and man-made disasters; prepare for, respond to, and reduce the impacts of disasters; and decrease the time and resources needed to recover from disasters.	Alternative 2, NS Mayport would not affect the state's emergency planning and response efforts, excavation procedures, or flood-control procedures.

Table 2 Florida Coastal Management Program Statutes Not Applicable to Alternative 2 of the Proposed Action

Statute	***Scope***	***Explanation of Non-Applicability***
Chapter 253 – State Lands	Provides the basis for the acquisition, administration, management, control, supervision, conservation, protection, and disposition of all lands owned by the state.	Alternative 2, NS Mayport would occur on federal property and would have no effect on state lands.
Chapter 258, 259, 260, and 375 – State Parks and Preserves, Land Acquisition for Conservation or Recreation, Florida Greenways and Trails Act, Outdoor Recreation and Conservation Lands	Chapter 258 addresses the state's administration of state parks, aquatic preserves, and recreation areas, to ensure conservation of these properties. Chapter 259 addresses acquisition and management of lands to maintain the state's unique natural resources; protect air, land, and water quality; promote water resource development; promote restoration activities on public lands; and provide lands for natural resource based recreation. Chapter 260 establishes a statewide system of greenways and trails in order to conserve, develop, and use the natural resources of Florida for healthful and recreational purposes. Chapter 375 addresses the development of a comprehensive outdoor recreation plan.	No state parks, state trails, state aquatic preserves, or wild and scenic river segments would be affected by Alternative 2, NS Mayport, and opportunities for recreation on state lands would not be affected.
Chapter 267 – Historical Resources	Addresses management and preservation of the state's archaeological and historical resources. The state historic preservation program operates in conjunction with the NHPA to require state and federal agencies to consider the effect of their direct or indirect actions on historic and archeological resources. These resources cannot be destroyed or altered unless no prudent alternative exists. Unavoidable impacts must be mitigated.	As further described on pages 4 and 5 herein, Alternative 2, NS Mayport would not affect cultural resources managed by the State of Florida, as no such sites have been identified within the Project footprint. However, should any cultural resources that are managed by the State of Florida be discovered during construction, the activity would cease and the discovery would be immediately reported to the installation Environmental Director and the Florida State Historic Preservation Officer.

Table 2 Florida Coastal Management Program Statutes Not Applicable to Alternative 2 of the Proposed Action

Statute	***Scope***	***Explanation of Non-Applicability***
Chapter 288 – Commercial Development and Capital Improvements	Establishes the framework to promote and develop general business, trade, and tourism components of the state economy.	Alternative 2, NS Mayport would not affect the natural, coastal, historical, or cultural tourism assets of the state, or affect the development of nature-based tourism and recreation.
Chapter 334, 339 – Transportation Administration, Transportation Finance and Planning	Chapter 334 addresses the state's policy concerning transportation administration. Chapter 339 addresses the finance and planning needs of the state's transportation system.	Alternative 2, NS Mayport would not affect the administration of the state's transportation system, or the finance and planning of the state's transportation system.
Chapter 377 – Energy Resources	Addresses regulation, planning, and development of oil and gas resources of the state.	Energy resource production, including oil and gas, and the transportation of oil and gas, would not be affected by Alternative 2, NS Mayport.
Chapter 380 – Land and Water Management	Establishes land and water management policies to protect natural resources and the environment, and to guide and coordinate local decisions relating to growth and development.	Development of state lands with regional (i.e. more than one county) impacts would not occur. No changes to coastal infrastructure such as capacity increases of existing coastal infrastructure, or use of state funds for infrastructure planning, designing or construction would occur.
Chapter 381 – Public Health, General Provisions	Establishes public policy concerning the state's public health system, which is designated to promote, protect, and improve the health of all people in the state.	Alternative 2, NS Mayport does not involve the construction of an on-site sewage or treatment system. There already is a plan (not related to this action) to replace the existing treatment plant with planned completion in 2020.
Chapter 388 – Mosquito Control	Describes the policy to conduct mosquito control in a manner consistent with protection of the environmental and ecological integrity of lands and waters throughout the state.	Alternative 2, NS Mayport would not further propagation of mosquitoes or affect mosquito control efforts.
Chapter 553 – Building and Construction Standards	Addresses building construction standards and provides for a unified Florida Building Code.	The proposed facility construction and renovations are not subject to the provisions of the Florida Building Code.
Chapter 597 – Aquaculture	Establishes public policy concerning the cultivation of aquatic organisms in the state.	Aquaculture facilities would not be constructed, and aquatic resources supporting aquaculture activities would not be affected.

Enforceable Policies Applicable to Implementing the Proposed Action

Chapter 373 – Water Resources

This statute addresses sustainable water management; the conservation of surface and ground waters for full beneficial use; the preservation of natural resources, fish, and wildlife; protecting public land; and promoting the health and general welfare of Floridians.

Alternative 2, NS Mayport would be conducted in a manner consistent with Chapter 373. Any applicable permitting requirements would be satisfied in accordance with 62-25 Florida Administrative Code (FAC) and NPDES. NS Mayport would submit a notice of intent to use the generic permit for stormwater discharge under the NPDES program prior to project initiation according to Section 403.0885, Florida Statutes. The proposed action would also require coverage under the generic permit for stormwater discharge from construction activities that disturb one or more acres of land (FAC 62-621).

Approximately 8 acres of impervious surfaces would be added at NS Mayport. To reduce stormwater runoff, retention structures would be provided to collect stormwater from the newly developed area. These stormwater retention structures would be designed, through size and depth of the retaining areas and the manner in which it drains to the system, to discharge no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Construction practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. Stormwater best management practices and standard operating procedures would continue to be used for erosion and sediment control; these procedures are detailed in the NS Mayport SWPPP

The Navy has determined that Alternative 2, NS Mayport is fully consistent with this policy.

Chapter 376 – Pollution Discharge Prevention and Removal

This statute provides a framework for the protection of the state's coastline from spills, discharges, and releases of pollutants. The discharge of pollutants into or upon any coastal waters, estuaries, tidal flats, beaches, and lands adjoining the seacoast of the state is prohibited.
The statute:

- Provides for hazards & threats of danger and damages resulting from any pollutant discharge to be evaluated
- Requires the prompt containment and removal of pollution; provides penalties for violations
- Ensures the prompt payment of reasonable damages from a discharge.

Alternative 2, NS Mayport would be conducted in a manner consistent with Chapter 376. All required permits would be procured, and established procedures for transport, storage, and handling of hazardous materials would be followed. The Navy does not anticipate the discharge of any pollutants in the marine environment or upon surface or ground waters. In the event of a spill, a written Spill Prevention, Control, and Countermeasure Plan would be followed. BMPs would be incorporated to minimize impacts on water quality.

The Navy has determined that Alternative 2, NS Mayport is fully consistent with this policy.

Chapter 379 – Fish and Wildlife Conservation

This statute establishes the framework for the management and protection of Florida's wide diversity of fish and wildlife resources. It is Florida's policy to conserve and wisely manage these resources. Particular attention is given to those species defined as being endangered or threatened.

The following federally protected species have been observed on MS Mayport: piping plover, red knot, wood stork, and nesting leatherback, and loggerhead sea turtles. The Navy determined that Alternative 2, NS Mayport may affect, but is not likely to adversely affect these protected species.

The Navy has determined that Alternative 2, NS Mayport is consistent to the maximum extent practicable with this policy.

Chapter 403 – Environmental Control

This statute establishes public policy concerning environmental control in the state and authorizes the regulation of pollution of the air and waters.

Alternative 2, NS Mayport would be conducted in a manner consistent with Chapter 403. This includes implementation of appropriate BMPs for erosion and sediment control, along with best management practices to prevent spills if petroleum products are temporarily stored on site during construction. The proposed action would not significantly impact fish, wildlife, or critical habitats. No wetlands would be impacted. Construction and demolition activities are not anticipated to degrade the water quality or affect beneficial uses of surface water or groundwater resources. All work would be conducted under FDEP permits as described in the discussion for Chapter 373. No significant impacts to local or regional air quality would be expected from implementing the proposed action; Duval County would remain in attainment for all criteria pollutants.

The Navy has determined that Alternative 2, NS Mayport is fully consistent with this policy.

Chapter 582 – Soil and Water Conservation

This statute provides for the control and prevention of soil erosion. It is Florida's policy to preserve natural resources; control and prevent soil erosion; prevent floodwater and sediment damages; and further the conservation, development, and use of soil and water resources, and the disposal of water. Land use policies are evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources on site or in adjoining properties.

Alternative 2, NS Mayport would be conducted in a manner consistent with Chapter 582. This includes implementation of appropriate best management practices for erosion and sediment control. Construction practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. The Navy would develop a SWPPP for the proposed construction activities prior to implementing the action. The SWPPP would describe and ensure implementation of practices that would reduce pollutants in stormwater discharges into the Atlantic Ocean and prevent violations of applicable regulations and standards.

The Navy has determined that Alternative 2, NS Mayport is fully consistent with this policy.

Summary

The Navy has determined that Alternative 2, NS Mayport would be fully consistent with the enforceable policies of Chapters 373, 376, 403, and 582 of the FCMP.

The Navy has determined that Alternative 2, NS Mayport would be consistent to the maximum extent practicable with the enforceable policy of Chapter 379 of the FCMP.

DEPARTMENT OF THE NAVY
COMMANDER
NAVY REGION MID-ATLANTIC
1510 GILBERT ST.
NORFOLK, VA 23511-2737

IN REPLY REFER TO:
5090
EV21/08/RE488
AUG 8 2016

Ms. Bettina Sullivan
Office of Environmental Impact Review
Department of Environmental Quality
Post Office Box 1105
Richmond, VA 23218

Dear Ms. Sullivan:

SUBJECT: FEDERAL COASTAL CONSISTENCY DETERMINATION FOR THE HOME BASING OF MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, WALLOPS FLIGHT FACILITY, VIRGINIA

The Navy proposes to operate and maintain MQ-4C Triton Unmanned Aircraft System (Triton UAS) on the East Coast. To fulfill the proposed action, the Navy identified three alternatives: Alternative 1 at Naval Air Station Key West and Alternative 2 at Naval Station Mayport in Florida, and Alternative 3 at NASA's Wallops Flight Facility (WFF) in Virginia.

The enclosed Federal Coastal Consistency Determination (CCD) and associated figures are being submitted in accordance with Section 307 (c) (1) of the Federal Coastal Zone Management Act of 1972 as amended for Alternative 3 of the proposed action.

The Department of the Navy and NASA (cooperating agency) have determined that the proposed federal agency action is reasonably likely to affect a land use, water use, or natural resource of the Commonwealth of Virginia's coastal zone. However, the Navy will conduct the proposed activity in a manner that will be fully consistent with the applicable enforceable policies of the Virginia Coastal Zone Management Program. The Navy has initiated consultation with the Virginia State Historic Preservation Officer (SHPO) to resolve any potential effects on historic properties associated with this project.

Our point of contact is Ms. Justine Woodward who may be reached at (757) 341-0496 or E-Mail at Justine.Woodward@navy.mil.

Sincerely,

MICHAEL W. JONES
Director, Environmental Planning
and Conservation
By direction of the Commander

Enclosure: 1. Coastal Consistency Determination (CCD) and Associated Figures

FEDERAL COASTAL CONSISTENCY DETERMINATION

HOME BASING OF MQ-4C TRITON UNMANNED AIRCRAFT SYSTEM NASA WALLOPS FLIGHT FACILITY, VIRGINIA

Proposed Federal Agency Action

Introduction

This document provides the Commonwealth of Virginia with the U.S. Department of the Navy's (Navy) and the National Aeronautics and Space Administration's (NASA) Consistency Determination under Coastal Zone Management Act Section 307(c)(1) of the federal Coastal Zone Management Act (CZMA) of 1972, as amended, and 15 Code of Federal Regulations part 930, Subpart C, for the Navy's proposal to operate and maintain MQ-4C Triton Unmanned Aircraft System (Triton UAS) on the East Coast. To fulfill the Proposed Action, the Navy identified three alternatives: Alternative 1 at Naval Air Station Key West and Alternative 2 at Naval Station Mayport in Florida, and Alternative 3 at NASA's Wallops Flight Facility (WFF) in Virginia. This document addresses solely Alternative 3 at WFF, which is located in Accomack County, Virginia (herein referred to as the "Proposed Action").

After careful consideration, the Navy and NASA have determined that the Proposed Action would be undertaken in a manner fully consistent with the applicable enforceable polices of the Virginia Coastal Zone Management (CZM) Program.

Description of the Proposed Federal Agency Action

The Navy and NASA propose to home base four Triton UAS aircraft and support a maintenance hub for up to four additional Triton UAS. An average of five Triton UAS flight operations (take-offs or landings) per day (1,825 annually) would occur. Demolition and construction activities to support the home basing are currently scheduled to begin in 2017, Triton UAS assets are scheduled to begin arriving in 2019, and steady state operations would be achieved in the 2023 timeframe. In total, up to 400 personnel and approximately 500 family members are associated with the Proposed Action. Personnel and their family members would gradually relocate to the surrounding area in phases, from 2019 to 2023.

Project Location

The WFF is a NASA Goddard Space Flight Center field installation located in Accomack County on the eastern shore of Virginia. The facility consists of three distinct landmasses—the Main Base, Wallops Mainland, and Wallops Island—totaling nearly 6,500 acres. Aircraft operations occur at the airfield, which is located on the Main Base (Figure 1).

Under the Proposed Action, approximately 10 acres in the industrialized area of the WFF airfield would be developed to support the home basing action: 5 acres of paved areas and 5 acres of maintained vegetation (turf grass) (Figure 2).

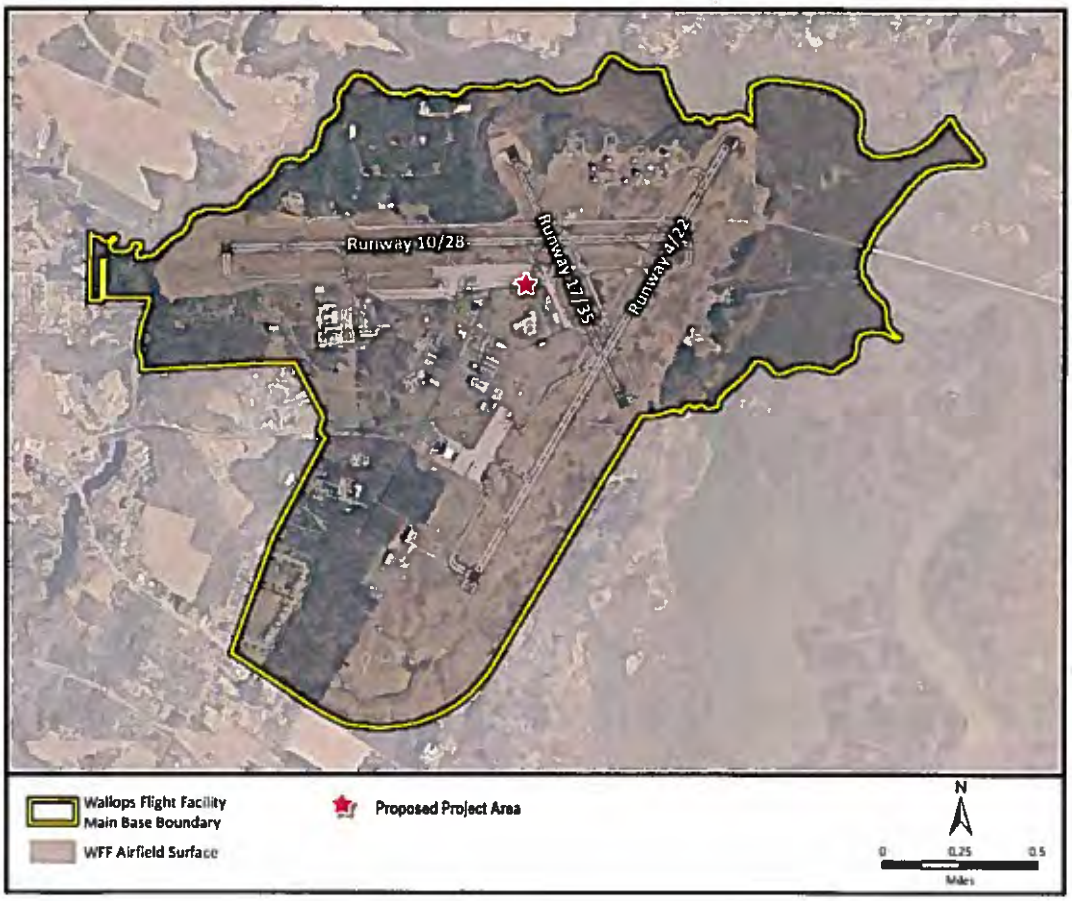


Figure 1 - Alternative 3: Wallops Flight Facility, Proposed Activity Location within the Main Base/Airfield

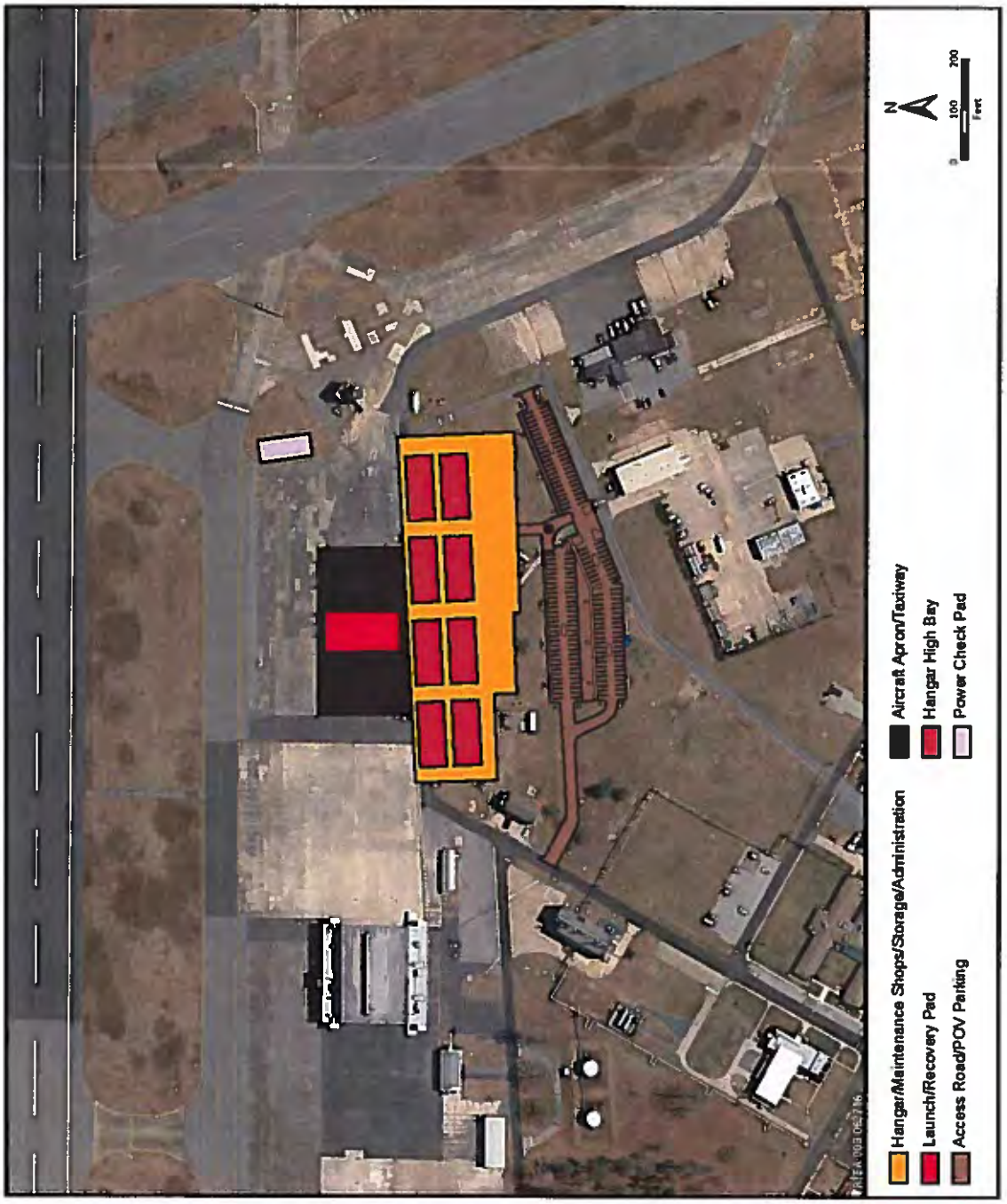


Figure 2 - Wallops Flight Facility: Proposed Construction and Infrastructure Improvements

Several project components were identified to support the home basing of the Triton UAS at WFF (Table 1).

Table 1 Wallops Flight Facility Proposed Project Components for the Triton Unmanned Aircraft System Home Basing

Description	*Project Size*	*Project Detail*
Hangar/Maintenance Shops/Storage/ Administration	150,000 square feet	Operations facilities with capacity to accommodate and maintain eight Triton UAS aircraft, storage, and administrative activities
Aircraft parking apron, personally-owned vehicle (POV) parking lot, and access roads	5 acres	Parking for up to eight Triton UAS aircraft, access roads, and parking lot for aircraft maintainers and operators

The Draft EA (separately available on August 23 via the United States Fleet Forces website: http://www.public.navy.mil/usff/environmental/Pages/NEPAprojects.aspx and certain local area libraries (i.e., Wallops Island, VA; Chincoteague Island, VA; Pocomoke, MD; and Accomack, VA) provides a detailed description of the Proposed Action. A complete description of all coastal resources and potential effects on them is included in Chapters 8 and 9 of the Draft EA, which is incorporated by reference herein.

Background

The Coastal Zone Management Act of 1972 (CZMA), codified in 16 U.S. Code section 1451 *et seq.*, and administered by the Secretary of Commerce through the Office of Coastal Resources Management of the National Oceanic and Atmospheric Administration, established a comprehensive regulatory scheme for effective management, beneficial use, protection, and development of the coastal zone and its natural resources. CZMA encourages coastal states and provides a mechanism for them to develop, obtain federal approval for, and implement a broad-based coastal management program (CMP).

Federal approval of a state CMP triggers an obligation upon federal agencies under CZMA section 307 to make coastal consistency determinations for their activities. Section 307 applies to federal agency activity in a state's coastal zone and also to federal agency activity outside the coastal zone, if the activity affects a land or water use in or natural resources of the coastal zone. Federal agency activity includes activity performed by a federal agency, approved by a federal agency, or for which a federal agency provides financial assistance. Such activity, whether direct, indirect, or cumulative, must be demonstrated to be consistent with the enforceable

policies of the state's CMP, unless full consistency is otherwise prohibited by federal law. There are no categorical exemptions to or exclusions from section 307.

The Navy and NASA have determined that the proposed federal agency action is reasonably likely to affect a land use, water use, or natural resource of the Commonwealth of Virginia's coastal zone. Therefore, the Navy and NASA have prepared this consistency determination rather than a no effect determination. However, as discussed herein, the Navy will conduct the proposed activity in a manner that will be fully consistent with the applicable enforceable policies of the Virginia Coastal Zone Management Program.

The nine enforceable policies of Virginia's federally-approved CZM Program are: (1) fisheries management; (2) subaqueous lands management; (3) wetlands management; (4) primary coastal sand dunes management; (5) point source pollution control; (6) non-point source pollution control; (7) shoreline sanitation; (8) air pollution control; and (9) coastal lands management.

This Coastal Consistency Determination is submitted under CZMA and its implementing regulations, and Chief of Naval Operations Instruction M-5090.1, "Environmental Readiness Program Manual."

Analysis of Enforceable Policies

1. Fisheries Management

Pursuant to Code of Virginia §28.2-200 through 713 and §29.1-100 through 570, the Virginia Marine Resources Commission (VMRC) and the Virginia Department of Game and Inland Fisheries (VDGIF) regulates finfish and shellfish resources through the management of commercial and recreational fisheries. Pursuant to Code of Virginia §3.1-249.59 through 249.62, VMRC, in cooperation with the VDGIF and the Virginia Department of Agriculture and Consumer Services (VDACS), monitors boating activities to mitigate threats to marine animal species from the introduction of tributyltin, a component found in certain types of boat paint.

Consistency Analysis

Given the inland location, the Proposed Action would have no direct impacts on commercial or recreational fisheries. Indirect impacts on fisheries could result from sedimentation during construction and from increased stormwater runoff and sedimentation during operation. Short- and long-term impacts on water quality as a result of sedimentation and increased stormwater runoff would be avoided or mitigated through best management practices (BMPs). Construction BMPs to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater

(e.g., spill plans) would be adhered to and incorporated into final planning and construction. The Proposed Action would not violate the provisions outlined in Code of Virginia sections §28.2-200 through 28.2-713 and Code of Virginia sections §29.1-100 through 29.1-570.

The Proposed Action would be fully consistent with this policy.

2. Subaqueous Lands Management

Pursuant to Code of Virginia §28.2-1200 through 1211, the VMRC administers a permit program for the use of State-owned subaqueous lands. The management program for subaqueous lands establishes conditions for granting or denying permits for the use of state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the VDEQ Water Division.

Consistency Analysis

The Proposed Action would occur entirely in areas of WFF that are not subject to VMRC jurisdiction and the Proposed Action would not require a VMRC permit. No oyster beds would be impacted and no dredging or fill activities are proposed.

The Proposed Action would have no effect on subaqueous lands management so it is fully consistent.

3. Wetlands Management

Pursuant to Code of Virginia §28.2-1301 through 1320, the VMRC administers a program for the protection of tidal wetlands. Pursuant to Code of Virginia §62.1-44.15.5 and the Clean Water Act (CWA) (33 U.S.C. §1251 et seq.), the VDEQ administers a water protection permit program to include tidal and non-tidal wetlands. The U.S. Army Corps of Engineers (USACE) has permitting jurisdiction over Waters of the U.S. under section 404 of the CWA. Executive Order (EO) 11900 requires that new construction in wetlands be avoided to the greatest extent possible and that all practicable measures be taken to minimize impacts on wetlands.

Consistency Analysis

No wetlands would be removed or impacted under the Proposed Action. Indirect impacts on wetlands, in the form of water quality impacts resulting from increased stormwater runoff or sedimentation, could occur but would be minimized. Impacts of potential site grading would be minimal because the site is relatively flat, which would minimize the potential for indirect

impacts on wetlands. The nearest wetlands to the project site are over 0.5 miles distant, and any overland flow would occur across vegetated areas, increasing the likelihood of capturing sediment and runoff prior to reaching wetlands. The construction of the Proposed Action would be subject to the provisions of a Construction General Permit administered as part of the Virginia Stormwater Management Program and would be carried out consistent with the applicable construction site standards established by the Virginia Erosion and Sedimentation Control Program.

The Proposed Action would be fully consistent with this policy.

4. Coastal Primary Dunes Management

Pursuant to Code of Virginia §28.2-1400 through 1420, the VMRC administers a program to prevent the destruction or alteration of coastal primary dunes.

Consistency Analysis

Because the WFF Main Base is located inland, coastal primary sand dunes do not occur at the project site under consideration.

The proposed construction and flight operations activities would have no effect on Virginia coastal primary sand dunes.

5. Point Source Pollution Control

Pursuant to Code of Virginia §62.1-44.15 and the CWA (33 U.S.C. §1251 et seq.), the VDEQ regulates discharges to state waters through the Virginia Pollution Discharge Elimination System (VPDES) and Virginia Pollution Abatement Permit programs.

Consistency Analysis

The Proposed Action would not significantly change the stormwater rate and volume of runoff with 5 acres of new impervious surfaces introduced. Best management practices would continue to be used to control existing erosion and stormwater runoff. Any applicable permitting requirements would be satisfied in accordance with Virginia and National Pollutant Discharge Elimination Systems requirements.

The Proposed Action would be fully consistent with this policy.

6. Non-Point Source Pollution Control

Pursuant to Code of Virginia §62.1-44.15:24 et seq. and §62.1-44.15:51 et seq., the VDEQ administers a program for the control of soil sedimentation and erosion into surface waters and for reducing chemical inputs conveyed to water bodies by these processes.

Consistency Analysis

Approximately 5 acres of impervious surfaces would be added to WFF. Localized increases in stormwater runoff could potentially increase non-point source runoff to the Atlantic Ocean. Practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction. The Navy, in cooperation with NASA, would implement appropriate best management practices to avoid this impact.

Prior to implementation of the Proposed Action, the Navy and NASA would obtain permit coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities from VDEQ for the proposed construction activities. The Navy and NASA would select, install, and maintain effective erosion- and sediment-control measures as identified and as necessary to comply with the Construction General Permit.

The construction of the Proposed Action would be subject to the provisions of a Construction General Permit administered as part of the Virginia Stormwater Management Program and would be carried out consistent with the applicable construction site standards established by the Virginia Erosion and Sedimentation Control Program. Prior to implementation of the Proposed Action, the general contractor would prepare a site-specific Storm Water Pollution Prevention Plan (SWPPP) and ensure compliance with its provisions during and after the construction phase. The Navy would oversee implementation of the Proposed Action to ensure it is consistent with its Low Impact Development (LID) Policy for Storm Water Management (November 16, 2007). This policy addresses construction site stormwater runoff by implementing BMPs to mitigate erosion and sedimentation from land disturbance (e.g., installation of hay bales and silt fences, maintaining 50-foot riparian buffers along jurisdictional waters/linear wetlands [to the maximum extent practicable], maintaining existing 50-foot vegetated buffers adjacent to other wetlands, and phasing of construction-related activities to minimize soil exposure) to reduce erosion and sedimentation from land disturbance.

Potential spills of fuels or other chemicals and hazardous materials could occur during construction and operation of the home base site. Necessary precautions to avoid any contamination of water bodies on station but outside of the project site that might result from

spills during construction or fluid leaks during operations would follow appropriate response procedures identified in a Spill Prevention, Control, and Countermeasures (SPCC) plan and WFF's Integrated Contingency Plan (ICP).

The Proposed Action would be fully consistent with this policy.

7. Shoreline Sanitation

Pursuant to Code of Virginia §32.1-164 through 165, the Virginia Department of Health regulates the storage, treatment, disposal, or reclamation of sewage or combined sewage and industrial wastes, including septic tanks and alternative discharge sewage systems.

Consistency Analysis

The Proposed Action would not involve the installation of septic tanks. The Proposed Action would utilize the NASA-owned and operated, state-of-the-art 300,000-gallon-per-day federally owned treatment works (FOTW). The FOTW currently treats flows of approximately 60,000 gallons per day. Treated wastewater from the FOTW is discharged via a single outfall to an unnamed freshwater tributary to Little Mosquito Creek under VPDES permit VA0024457 issued by the VDEQ. The permit expires on September 30, 2019. The WFF Environmental Office tests the wastewater discharge on a daily basis to ensure discharges do not exceed permitted limits.

Furthermore, the Proposed Action would incorporate pollution prevention, energy, and water conservation and water quality initiatives into all facilities and activities where practicable. The objectives of the initiatives would be to improve waste reduction and management practices; energy efficiency and energy conservation practices; water resource conservation and management; and recycling and reuse practices. When applicable, waste generated during construction would be recycled according to the type of material.

The Proposed Action would be fully consistent with this policy.

8. Air Pollution Control

Pursuant to Code of Virginia §10-1.1300 and the Clean Air Act (CAA) (42 U.S.C. §7401 et seq.), the VDEQ implements a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). The State Air Pollution Control Board administers this program.

Consistency Analysis

Construction projects and operational missions under the Proposed Action would contribute to the annual air emissions inventory. The emissions generated under the Proposed Action would not violate federal or Virginia air quality standards.

The Proposed Action would generate no new point sources of air pollution. Temporary and minor increases in air emissions from the combustion of fossil fuels by motorized equipment, operation of aircraft and ground vehicles, and from emissions of fugitive dust and dirt during site ground disturbance, would be reduced through the implementation of BMPs. Only minimal amounts of vegetation (turf grass) would be removed, and thus carbon sequestration and loss of annual carbon dioxide (CO_2) uptake from any "carbon sink" would be negligible. Construction emissions and annual operations emissions, including aircraft, ground vehicle and equipment emissions, would not exceed *de minimis* levels under the CAA General Conformity Rule (GCR), and no significant impact on regional air quality would result.

The Proposed Action would be fully consistent with this policy.

9. Coastal Lands Management

Administered by the Chesapeake Bay Local Assistance Department, the Chesapeake Bay Preservation Act guides land development in coastal areas to protect the Chesapeake Bay and its tributaries. Coastal lands management is conducted by state and local cooperative programs administered by VDEQ's Water Division established pursuant to the Chesapeake Bay Preservation Act (Virginia Code 62.1-44.15:67 through 62.1-44.15:79) and Chesapeake Bay Preservation Area Designation and Management Regulations. The Chesapeake Bay Designation Act and Management Regulations require localities in Tidewater Virginia to establish local protection ordinances designating Chesapeake Bay Resource Protection Areas (RPAs) or Resource Management Areas (RMAs). In Accomack County, the Chesapeake/Atlantic Preservation Area (CAPA) applies to all of Accomack County, except for incorporated towns and Federal lands. Areas shown on the CAPA map are subject to the requirements of the CAPA Ordinance.

Consistency Analysis

Construction best management practices to reduce soil erosion and runoff (e.g., silt fences) and minimize pollution of stormwater (e.g., spill plans) would be adhered to and incorporated into final planning and construction.

NASA WFF is specifically excluded from Accomack County's CAPA overlay area and, therefore, would have no effect on CAPA land use, water use, or natural resources covered by this policy.

CONCLUSION

Based on the foregoing analysis, the Navy has determined that the proposed federal activity is reasonably likely to affect land uses, water uses, or natural resources of the Commonwealth of Virginia's coastal zone pursuant to the CZMA. However, the activity would be conducted in a manner that is fully consistent with the enforceable policies of the Virginia CZM Program.

MICHAEL H. JONES
Acting Environmental Program Manager
Navy Region Mid-Atlantic

8 Aug 16
Date

APPENDIX C
AIR EMISSIONS CALCULATIONS

All Alternatives: UAV Operational and Commuting Emissions

Table 1. Operation of MQ-4C Engine is Rolls-Royce/Allison AE3007H

Number Type of Operation	Number of Operations per Year	Engine Power Setting	Fuel Flowrate (lb/hr)	Time in Mode (hr)	Total Fuel Used (lb)	Emission Factor (lb/1000 lb)						
						VOCs	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Taxi/Idle-out	1300	Idle	427.65	0.1083	46.33	2.39	17.31	3.82	1.2	0.15	0.14	3.1
Takeoff	1300	Military	3021.05	0.0067	20.14	0.26	0.83	20.5	1.2	0.27	0.24	3.1
Climbout	1300	Intermediate	2531.72	0.0083	21.10	0.26	0.83	17.43	1.2	0.24	0.22	3.1
Approach	1300	Approach	946.85	0.0267	25.25	0.61	3.27	7.77	1.2	0.22	0.2	3.1
Taxi/Idle-In	1300	Idle	427.65	0.1083	46.33	2.39	17.31	3.82	1.2	0.15	0.14	3.1
						Total Emission in pounds						
						VOCs	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
						143.9	1,042.5	230.1	72.3	9.0	8.4	187
						6.8	21.7	536.7	31.4	7.1	6.3	81
						7.1	22.8	478.1	32.9	6.6	6.0	85
						20.0	107.3	255.0	39.4	7.2	6.6	102
						143.9	1,042.5	230.1	72.3	9.0	8.4	187
					Annual Fuel Emissions (tons/year)	**0.16**	**1.12**	**0.86**	**0.12**	**0.02**	**0.02**	
					Annual Fuel Emission (metric ton/year)							**0.29**

Table 2. Assume all additional staff live off-base and commute to work daily

Vehicles	# vehicles	# days	mi/day	**VOC** lb/mi	**CO** lb/mi	**NO_x** lb/mi	**SO_2** lb/mi	**PM_{10}** lb/mi	**$PM_{2.5}$** lb/mi	**CO_2** lb/mi	**CH_4** lb/mi	**N_2O** lb/mi
passenger vehicles	400	240	20	0.00023	0.01389	0.00132	0.00001	0.00009	0.00008	0.82432	3.81E-05	7.94E-05
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb	**CH_4** lb	**N_2O** lb
				447.96	26660.43	2528.20	23.64	176.13	162.10	1,582,695	73	152
			Tons per Year	**0.22**	**13.33**	**1.26**	**0.01**	**0.09**	**0.08**	**791.35**	**0.04**	**0.08**
			CO_2e in Metric Tons per Year:							**739.33**		

Table 3. Total Operational Emissions in 2023

YEAR	**VOC** T/yr	**CO** T/yr	**NO_x** T/yr	**SO_2** T/yr	**PM_{10}** T/yr	**$PM_{2.5}$** T/yr	**CO_2** MT/yr
2023	**0.38**	**14.45**	**2.13**	**0.14**	**0.11**	**0.10**	**739.62**

Alternative 1: Construction Emissions

Basic Conversions

453.59	grams per pound
43,560	Conversion from Acre to SF
0.03704	Cubic feet to Cubic Yards
0.1111	Square Feet to Square Yards
1.4	tons/CY for Gravel
80,000	lbs/Truck Load for Delivery
1.66	CY for each CY of asphalt/concrete demo
0.33	asphalt thickness for demolition
0.33	asphalt thickness for pavement
2000	pounds per ton
145.00	lb/ft^3 density of Hot Mix Asphalt
0.67	asphalt thickness for pavement on runways

Table 1. Site Prep, Excavate/Fill

10 mi RT for soil hauling

Site Prep - Excavate/Fill (CY) 57,089 CY — 33,494 CY hauled — 254 Delivery RT mi (Homestead)

Grading (SY) 47,868 SY — Assume compact 0.5 feet (0.166 yards) — 7,978 CY compacted

Off-road Equipment	Cumulative Hours	Engine Horse Power	Load Factor	VOC g/hp-hr	CO g/hp-hr	NO_x g/hp-hr	SO_2 g/hp-hr	PM_{10} g/hp-hr	$PM_{2.5}$ g/hp-hr	CO_2 g/hp-hr
Excavator	210	243	0.59	0.34	1.21	4.03	0	0.22	0.22	536
Skid Steer Loader	247	160	0.23	0.38	1.47	4.34	0	0.31	0.30	536
Dozer (Rubber Tired)	247	145	0.59	0.38	1.41	4.17	0	0.30	0.29	536
Compactor	37	103	0.58	0.40	1.57	4.57	0	0.32	0.31	536
Grader	17	285	0.58	0.34	1.21	4.07	0	0.23	0.22	536
On-road Equipment	**Miles**	**Engine Horse Power**	**Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NO_x lb/mile**	**SO_2 lb/mile**	**PM_{10} lb/mile**	**$PM_{2.5}$ lb/mile**	**CO_2 lb/mile**
Dump Truck (14 CY capacity)	23,925	230	-	0.002	0.009	0.039	1.82E-05	0.002	0.002	3.382
Delivery Truck	2,540	265	-	0.002	0.009	0.039	1.82E-05	0.002	0.002	3.382
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				22.83	80.26	267.46	7.65	14.79	14.35	35,564
				7.68	29.46	86.94	2.31	6.12	5.94	10,734
				17.55	65.89	194.43	5.37	13.79	13.38	24,956
				1.93	7.65	22.25	0.56	1.56	1.51	2,610
				2.13	7.48	25.22	0.71	1.40	1.36	3,319
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				39.70	205.26	938.33	0.44	40.46	39.29	80,923.16
				4.22	21.79	99.62	0.05	4.30	4.17	8,591.39
			Tons/year:	**0.05**	**0.21**	**0.82**	**0.01**	**0.04**	**0.04**	
			Metric tons/year:							**76**

Table 2. Gravel Work 10,052 CY 718 trips 63,184 miles (Marathon)

Off-road Equipment	Cumulative Hours	Engine Horse Power	Load Factor	VOC[1] g/hp-hr	CO[1] g/hp-hr	NOx[1] g/hp-hr	SO_2[1] g/hp-hr	PM10[1] g/hp-hr	PM2.5[1] g/hp-hr	CO_2[1] g/hp-hr
Dozer	101	0.347	0.59	0.34	1.21	4.08	0.12	0.23	0.22	536
Wheel Loader for Spreading	126	0.347	0.59	0.35	1.25	4.23	0.12	0.24	0.23	536
Compactor	277	0.802	0.43	0.36	1.34	4.45	0.12	0.26	0.25	536
On-road Equipment	**Miles**	**Engine Horse Power**	**Speed (miles/hour)**	**VOC** lb/mile	**CO** lb/mile	**NO_x** lb/mile	**SO_2** lb/mile	**PM_{10}** lb/mile	**$PM_{2.5}$** lb/mile	**CO_2** lb/mile
Dump Truck (gravel delivery)	63,184	230	45	0.002	0.009	0.039	1.82E-05	0.002	0.002	3.382
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				0.02	0.06	0.19	0.01	0.01	0.01	24
				0.02	0.07	0.24	0.01	0.01	0.01	30
				0.08	0.28	0.94	0.02	0.05	0.05	113
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				104.85	542.08	2478.10	1.15	106.85	103.76	213,715.80
			Tons/year:	**0.05**	**0.27**	**1.24**	**0.00**	**0.05**	**0.05**	
			Metric tons/year:							**97**

Table 3. Concrete Work 39,431 SF

Off-road Equipment	Cumulative Hours of Operation	Engine Horse Power	Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NO_x g/hp-hr	SO_2 g/hp-hr	PM_{10} g/hp-hr	$PM_{2.5}$ g/hp-hr	CO_2 g/hp-hr
Grader (CAT 120M2 or similar)	64	150	0.61	1.06	3.52	8.24	0	0.47	0.47	568
Steel drum roller/soil compactor	639	401	0.56	0.70	3.18	7.20	0	0.28	0.28	568
Paving/Concrete Machine	639	164	0.53	1.14	3.71	8.87	0	0.49	0.49	568
Curbing Machine	32	130	0.59	1.14	3.71	8.87	0	0.49	0.49	568
Cement and Motar Mixer 1	639	9	0.56	0.92	2.64	5.41	0	0.35	0.35	568
Cement and Motar Mixer 2	639	9	0.56	0.92	2.64	5.41	0	0.35	0.35	568
Cement and Motar Mixer 3	639	9	0.56	0.92	2.64	5.41	0	0.35	0.35	568
Tractor/Loader/Backhoe	639	75	0.55	1.50	4.22	8.33	0	0.80	0.80	568
On-road Equipment	**Cumulative Hours**	**Engine Horse Power**	**Speed (miles/hour)**	**VOC** lb/mile	**CO** lb/mile	**NO_x** lb/mile	**SO_2** lb/mile	**PM_{10}** lb/mile	**$PM_{2.5}$** lb/mile	**CO_2** lb/mile
Cement Truck	639	230	45	0.002	0.009	0.039	0.000	0.002	0.002	3.382
Water Truck/Oil truck	64	230	10	0.002	0.009	0.039	0.000	0.002	0.002	3.382
				Annual Emissions						
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				13.71	45.47	106.36	0.74	6.05	6.05	7,337
				220.50	1,006.95	2,276.46	15.82	89.21	89.21	179,782
				138.98	453.68	1,086.49	60.49	60.49	60.49	69,588
				6.14	20.05	48.01	2.67	2.67	2.67	3,075
				6.53	18.76	38.43	0.46	2.46	2.46	4,035
				6.53	18.76	38.43	0.46	2.46	2.46	4,035
				6.53	18.76	38.43	0.46	2.46	2.46	4,035
				87.11	245.23	483.78	3.49	46.61	46.61	33,025
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				47.72	246.70	1,127.78	0.52	48.63	47.22	97,262
				1.06	5.49	25.10	0.01	1.08	1.05	2,165
			Tons/year:	**0.27**	**1.04**	**2.63**	**0.04**	**0.13**	**0.13**	
			Metric tons/year:							**183**

Table 4. Paving

Pavement - Surface Area 8,149 SF
Paving - HMA 2,822 CF

Off-road Equipment	Cumulative Hours	Engine Horse Power	Load Factor	VOC g/hp-hr	CO g/hp-hr	NO_x g/hp-hr	SO_2 g/hp-hr	PM_{10} g/hp-hr	$PM_{2.5}$ g/hp-hr	CO_2 g/hp-hr
Grader	25	145	0.59	0.38	1.41	4.16	0.12	0.30	0.29	536
Steel drum roller/vibratory roller	37	401	0.59	0.34	2.46	5.53	0.12	0.34	0.33	536
Paving Machine	50	164	0.59	0.38	1.44	4.25	0.12	0.30	0.29	536
Asphalt Curbing Machine	5	130	0.59	0.40	1.57	4.57	0.12	0.32	0.31	536
On-road Equipment	**Cumulative Hours**	**Engine HP**	**Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NO_x lb/mile**	**SO_2 lb/mile**	**PM_{10} lb/mile**	**$PM_{2.5}$ lb/mile**	**CO_2 lb/mile**
Dump Truck	30	230	17	0.002	0.008	0.036	0.000	0.002	0.001	3.439
Water Truck	1	230	10	0.002	0.008	0.036	0.000	0.002	0.001	3.439
Hot Mix Asphalt (HMA)	**Volume of HMA**	**Weight of HMA (tons)**		**VOC lb/ton of asphalt**	**CO lb/ton of asphalt**	**NO_x lb/ton of asphalt**	**SO_2 lb/ton of asphalt**	**PM_{10} lb/ton of asphalt**	**$PM_{2.5}$ lb/ton of asphalt**	**CO_2 lb/ton of asphalt**
Standard Hot Mix Asphalt	2,822	2		0.04	-	-	-	-	-	-
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				1.77	6.66	19.62	0.54	1.39	1.35	2,526
				6.59	47.53	106.82	2.22	6.54	6.34	10,340
				4.05	15.39	45.35	1.23	3.20	3.10	5,714
				0.33	1.33	3.86	0.10	0.27	0.26	453
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				0.78	4.10	18.40	0.01	0.77	0.74	1,754
				0.02	0.08	0.36	0.00	0.02	0.01	34
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				0.08	-	-	-	-	-	-
			Tons/year:	**0.01**	**0.04**	**0.10**	**0.00**	**0.01**	**0.01**	
			Metric tons/year:							**9**

Table 5. Bldg Construction 82,732 SF

Off-road Equipment	Cumulative Hours of Operation	Engine Horse Power	Load Factor	Emission Factors VOC g/hp-hr	CO g/hp-hr	NO_x g/hp-hr	SO_2 g/hp-hr	PM_{10} g/hp-hr	$PM_{2.5}$ g/hp-hr	CO_2 g/hp-hr
Crane	496	330	0.58	0.25	1.22	5.26	0.11	0.21	0.20	530
Telehandler	827	99	0.59	0.51	3.94	4.93	0.13	0.52	0.51	594.61
Scissors Lift	662	83	0.59	0.51	3.94	4.93	0.13	0.52	0.51	594.61
Skid steer loader	414	67	0.59	1.69	7.97	6.70	0.15	1.19	1.15	690.87
pile driver	409	260	0.43	0.46	1.55	5.90	0.11	0.31	0.30	529.64
all terrain forklift	409	84	0.59	0.51	3.94	4.93	0.13	0.52	0.51	594.61
Diesel Generator (5)	500	40	0.43	0.26	1.41	3.51	0.11	0.23	0.22	536.20
On-road Equipment	**Cumulative Hours**	**Engine Horse Power**	**Speed (miles/hour)**	**VOC** lb/mile	**CO** lb/mile	**NO_x** lb/mile	**SO_2** lb/mile	**PM_{10}** lb/mile	**$PM_{2.5}$** lb/mile	**CO_2** lb/mile
Cement Truck	639	230	45	0.002	0.009	0.039	0.000	0.002	0.002	3.382
Delivery Truck	1,285	365	45	0.002	0.008	0.036	0.000	0.002	0.001	3.439
				Annual Emissions						
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				51.42	255.24	1100.85	23.87	43.48	42.17	110989.20
				54.26	419.56	524.91	13.62	55.50	53.83	63323.38
				36.42	281.57	352.27	9.14	37.24	36.13	42497.11
				61.06	287.47	241.66	5.36	42.90	41.62	24926.51
				46.78	156.44	594.97	11.48	31.64	30.69	53392.49
				22.77	176.06	220.27	5.72	23.29	22.59	26572.10
				4.98	26.71	66.52	2.05	4.40	4.26	10166.19
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				47.72	246.70	1127.78	0.52	48.63	47.22	97,262
				88.00	465.19	2086.50	1.04	87.03	84.33	198,905
			Tons/year:	**0.18**	**1.02**	**2.56**	**0.04**	**0.16**	**0.16**	
			Metric tons/year:							**236**

Table 4. Fugitive Dust

Year	PM_{10} tons/acre/mo	acres	days of disturbance	PM_{10} Total Tons	$PM_{2.5}/PM_{10}$ Ratio	$PM_{2.5}$ Total Tons
2018	0.42	10.4	180	39.3	0.1	3.9

Table 6. Construction Emissions Summary for 2018

YEAR	VOC T/yr	CO T/yr	NO_x T/yr	SO_2 T/yr	PM_{10} T/yr	$PM_{2.5}$ T/yr	CO_2 MT/yr
2018	**0.56**	**2.58**	**7.35**	**0.09**	**39.70**	**4.32**	**602**

Alternative 1: Construction Assumptions

Project Name	Type (Renov or Const)	FootPrint (AC)	Grading (sf)	Site Prep - Excavate/Fill (CY)	Building Construction - Total Size (sf)	Building Construction- foundation footprint (sf)	# Stories	Paving - Surface area (SF)	Pavement type, vehicle or aircraft	Paving - HMA (CF)	Sidewalks (sf)	Gravel Work (CY)	Concrete Work -(CY)
Warehouse	New	0.1	6,308	350	6,308	6,308	1	631	Vehicle	315	315	117	156
Aircraft Hangar	New	1.7	75,186	8,576	76,424	76,424	1	7,519	Vehicle	2,506	3,821	1,415	2,359
Totals		**1.9**	**81,494**	**8,927**	**82,732**	**82,732**	**-**	**8,149**	**-**	**2,822**	**4,137**	**1,532**	**2,515**
Construct New Taxiway	New	3.4	150,000	22,222	-	-	-	-	Aircraft	-	-	3,704	16,667
Wash Rack and Power Check Pad	New	0.7	31,926	1,774	-	-	-	-	Aircraft	-	-	788	3,547
Parking Apron	New	3.5	150,318	22,269	-	-	-	-	Aircraft	-	-	3,712	16,702
Construct Sewer Line	New	0.39	17,070	1,897	-	-	-	-	NA	-	-	316	-
Totals		**7.6**	**349,314**	**48,162**	**0**	**0**	**0**	**0**	**-**	**0**	**0**	**8,520**	**36,916**
Grand Total	-	**9.5**	**430,808**	**57,089**	**82,732**	**82,732**	-	**8,149**	-	**2,822**	**4,137**	**10,052**	**39,431**

All Construction
Equipment list from National Estimator, PACES and CALEEMOD information.
The Cumulative Hours of Operation is based on the productivity of the equipment or process.
Productivity of the Equipment is based on a number of sources including:
PACES (US Air Force Estimator) and 2012 National Construction Estimator (Craftsman Book Company 2012).
Additional sources for the productivity factor include: Henderson, Chris. Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects, and Builders. Version 2.2. 2008.
Equipment Manufacturer's websites such as Freightliner and Caterpillar
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South Coast Air Quality Management District. "Technical Paper: Methodology Reasoning and Policy Development of the California Emission Estimator Model" July 2011.
Estimated speed based on Henderson, Chris. Department of Civil and Environmental Engineering Carnegie Mellon University, "Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects, and Builders." Version 2.2. 2008.

Alternatives 2 and 3: Construction Emissions

Basic Conversions

453.59	grams per pound
43,560	Conversion from Acre to SF
0.03704	Cubic feet to Cubic Yards
0.1111	Square Feet to Square Yards
1.4	tons/CY for Gravel
80,000	lbs/Truck Load for Delivery
1.66	CY for each CY of asphalt/concrete demo
0.33	asphalt thickness for demolition
0.33	asphalt thickness for pavement
2000	pounds per ton
145.00	lb/ft^3 density of Hot Mix Asphalt
0.67	asphalt thickness for pavement on runways

Table 1. Site Prep, Excavate/Fill

Site Prep - Excavate/Fill (CY) 55,192 CY — Assume 60% hauled in or out — 33,115 CY hauled — 4 mi RT for soil hauling

Grading (SY) 45,971 SY — Assume compact 0.5 feet (0.166 yards) — 7,662 CY compacted — 20 Delivery RT mi

Off-road Equipment	Cumulative Hours of	Engine Horse Power	Load Factor	VOC g/hp-hr	CO g/hp-hr	NO_x g/hp-hr	SO_2 g/hp-hr	PM_{10} g/hp-hr	$PM_{2.5}$ g/hp-hr	CO_2 g/hp-hr
Excavator	184	243	0.59	0.34	1.21	4.03	0	0.22	0.22	536
Skid Steer Loader	221	160	0.23	0.38	1.47	4.34	0	0.31	0.30	536
Dozer (Rubber Tired)	200	145	0.59	0.38	1.41	4.17	0	0.30	0.29	536
Scraper Hauler Excavator	120	365	0.58	0.38	1.42	4.19	0	0.30	0.29	536
Compactor	35	103	0.58	0.40	1.57	4.57	0	0.32	0.31	536
Grader	16	285	0.58	0.34	1.21	4.07	0	0.23	0.22	536
On-road Equipment	**Miles**	**Engine Horse Power**	**Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NO_x lb/mile**	**SO_2 lb/mile**	**PM_{10} lb/mile**	**$PM_{2.5}$ lb/mile**	**CO_2 lb/mile**
Dump Truck (14 CY capacity)	9,461	230	-	0.002	0.009	0.039	1.82E-05	0.002	0.002	3.382
Delivery Truck	100	265	-	0.002	0.009	0.039	1.82E-05	0.002	0.002	3.382
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				20.00	70.33	234.35	6.70	12.96	12.57	31,161
				6.87	26.36	77.79	2.07	5.48	5.31	9,604
				14.21	53.35	157.43	4.35	11.17	10.83	20,207
				21.13	79.49	234.49	6.45	16.61	16.11	30,002
				1.82	7.24	21.05	0.53	1.47	1.43	2,469
				2.00	7.04	23.73	0.67	1.32	1.28	3,124
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				15.70	81.17	371.08	0.17	16.00	15.54	32,002.80
				0.17	0.86	3.92	0.00	0.17	0.16	338.24
			Tons/year:	**0.04**	**0.16**	**0.56**	**0.01**	**0.03**	**0.03**	
			Metric tons/year:							**58**

Table 2. Gravel Work 9,736 CY 695 trips 48 mi RT for WI

Off-road Equipment	Cumulative Hours	Engine Horse Power	Load Factor	VOC[1] g/hp-hr	CO[1] g/hp-hr	NO_x[1] g/hp-hr	SO_2[1] g/hp-hr	PM_{10}[1] g/hp-hr	$PM_{2.5}$[1] g/hp-hr	CO_2[1] g/hp-hr
Dozer	97	0.347	0.59	0.34	1.21	4.08	0.12	0.23	0.22	536
Wheel Loader for Spreading	122	0.347	0.59	0.35	1.25	4.23	0.12	0.24	0.23	536
Compactor	269	0.802	0.43	0.36	1.34	4.45	0.12	0.26	0.25	536
On-road Equipment	**Cumulative Miles**	**Engine Horse Power**	**Speed (miles/hour)**	**VOC** lb/mile	**CO** lb/mile	**NO_x** lb/mile	**SO_2** lb/mile	**PM_{10}** lb/mile	**$PM_{2.5}$** lb/mile	**CO_2** lb/mile
Dump Truck (gravel delivery)	33,360	230	45	0.002	0.009	0.039	1.82E-05	0.002	0.002	3.382
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				0.02	0.05	0.18	0.01	0.01	0.01	23
				0.02	0.07	0.23	0.01	0.01	0.01	30
				0.07	0.27	0.91	0.02	0.05	0.05	110
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				55.36	286.21	1,308.39	0.61	56.41	54.78	112,838.05
			Tons/year:	**0.03**	**0.14**	**0.65**	**0.00**	**0.03**	**0.03**	
			Metric tons/year:							**51**

Table 3. Concrete Work 39,431 SF

Off-road Equipment	Cumulative Hours of Operation	Engine Horse Power	Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NO_x g/hp-hr	SO_2 g/hp-hr	PM_{10} g/hp-hr	$PM_{2.5}$ g/hp-hr	CO_2 g/hp-hr
Grader (CAT 120M2 or similar)	64	150	0.61	1.06	3.52	8.24	0	0.47	0.47	568
Steel drum roller/soil compactor	639	401	0.56	0.70	3.18	7.20	0	0.28	0.28	568
Paving/Concrete Machine	639	164	0.53	1.14	3.71	8.87	0	0.49	0.49	568
Curbing Machine	32	130	0.59	1.14	3.71	8.87	0	0.49	0.49	568
Cement and Motar Mixer 1	639	9	0.56	0.92	2.64	5.41	0	0.35	0.35	568
Cement and Motar Mixer 2	639	9	0.56	0.92	2.64	5.41	0	0.35	0.35	568
Cement and Motar Mixer 3	639	9	0.56	0.92	2.64	5.41	0	0.35	0.35	568
Tractor/Loader/Backhoe	639	75	0.55	1.50	4.22	8.33	0	0.80	0.80	568
On-road Equipment	**Cumulative Hours**	**Engine Horse Power**	**Speed (miles/hour)**	**VOC** lb/mile	**CO** lb/mile	**NO_x** lb/mile	**SO_2** lb/mile	**PM_{10}** lb/mile	**$PM_{2.5}$** lb/mile	**CO2** lb/mile
Cement Truck	639	230	45	0.002	0.009	0.039	0.000	0.002	0.002	3.382
Water Truck/Oil truck	64	230	10	0.002	0.009	0.039	0.000	0.002	0.002	3.382
				Annual Emissions						
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				13.71	45.47	106.36	0.74	6.05	6.05	7,337
				220.50	1,006.95	2,276.46	15.82	89.21	89.21	179,782
				138.98	453.68	1,086.49	60.49	60.49	60.49	69,588
				6.14	20.05	48.01	2.67	2.67	2.67	3,075
				6.53	18.76	38.43	0.46	2.46	2.46	4,035
				6.53	18.76	38.43	0.46	2.46	2.46	4,035
				6.53	18.76	38.43	0.46	2.46	2.46	4,035
				87.11	245.23	483.78	3.49	46.61	46.61	33,025
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				47.72	246.70	1,127.78	0.52	48.63	47.22	97,262
				1.06	5.49	25.10	0.01	1.08	1.05	2,165
			Tons/year:	**0.27**	**1.04**	**2.63**	**0.04**	**0.13**	**0.13**	
			Metric tons/year:							**183**

Table 4. Paving

Pavement - Surface Area 8,149 SF
Paving - HMA 2,822 CF

Off-road Equipment	Cumulative Hours of	Engine Horse Power	Load Factor	VOC g/hp-hr	CO g/hp-hr	NO_x g/hp-hr	SO_2 g/hp-hr	PM_{10} g/hp-hr	$PM_{2.5}$ g/hp-hr	CO_2 g/hp-hr
Grader	25	145	0.59	0.38	1.41	4.16	0.12	0.30	0.29	536
Steel drum roller/vibratory roller	37	401	0.59	0.34	2.46	5.53	0.12	0.34	0.33	536
Paving Machine	50	164	0.59	0.38	1.44	4.25	0.12	0.30	0.29	536
Asphalt Curbing Machine	5	130	0.59	0.40	1.57	4.57	0.12	0.32	0.31	536
On-road Equipment	**Cumulative Hours**	**Engine Horse Power**	**Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NO_x lb/mile**	**SO_2 lb/mile**	**PM_{10} lb/mile**	**$PM_{2.5}$ lb/mile**	**CO_2 lb/mile**
Dump Truck	30	230	17	0.002	0.008	0.036	0.000	0.002	0.001	3.439
Water Truck	1	230	10	0.002	0.008	0.036	0.000	0.002	0.001	3.439
Hot Mix Asphalt (HMA)	**Volume of HMA (ft^3)**	**Weight of HMA (tons)**		**VOC lb/ton of asphalt**	**CO lb/ton of asphalt**	**NO_x lb/ton of asphalt**	**SO_2 lb/ton of asphalt**	**PM_{10} lb/ton of asphalt**	**$PM_{2.5}$ lb/ton of asphalt**	**CO_2 lb/ton of asphalt**
Standard Hot Mix Asphalt	2,822	2		0.04	-	-	-	-	-	-
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				1.77	6.66	19.62	0.54	1.39	1.35	2,526
				6.59	47.53	106.82	2.22	6.54	6.34	10,340
				4.05	15.39	45.35	1.23	3.20	3.10	5,714
				0.33	1.33	3.86	0.10	0.27	0.26	453
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				0.78	4.10	18.40	0.01	0.77	0.74	1,754
				0.02	0.08	0.36	0.00	0.02	0.01	34
				VOC lb	**CO lb**	**NO_x lb**	**SO_2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
				0.08	-	-	-	-	-	-
Tons/year:				**0.01**	**0.04**	**0.10**	**0.00**	**0.01**	**0.01**	
Metric tons/year:										**9**

Table 5. Bldg Construction 82,732 SF

Off-road Equipment	Cumulative Hours of Operation	Engine Horse Power	Load Factor	Emission Factors VOC g/hp-hr	CO g/hp-hr	NO_x g/hp-hr	SO_2 g/hp-hr	PM_{10} g/hp-hr	$PM_{2.5}$ g/hp-hr	CO_2 g/hp-hr
Crane	496	330	0.58	0.25	1.22	5.26	0.11	0.21	0.20	530
Telehandler	827	99	0.59	0.51	3.94	4.93	0.13	0.52	0.51	594.61
Scissors Lift	662	83	0.59	0.51	3.94	4.93	0.13	0.52	0.51	594.61
Skid steer loader	414	67	0.59	1.69	7.97	6.70	0.15	1.19	1.15	690.87
pile driver	409	260	0.43	0.46	1.55	5.90	0.11	0.31	0.30	529.64
all terrain forklift	409	84	0.59	0.51	3.94	4.93	0.13	0.52	0.51	594.61
Diesel Generator (5)	500	40	0.43	0.26	1.41	3.51	0.11	0.23	0.22	536.20
On-road Equipment	**Cumulative Hours**	**Engine Horse Power**	**Speed (miles/hour)**	**VOC** lb/mile	**CO** lb/mile	**NO_x** lb/mile	**SO_2** lb/mile	**PM_{10}** lb/mile	**$PM_{2.5}$** lb/mile	**CO_2** lb/mile
Cement Truck	639	230	45	0.002	0.009	0.039	0.000	0.002	0.002	3.382
Delivery Truck	1,285	365	45	0.002	0.008	0.036	0.000	0.002	0.001	3.439
				Annual Emissions						
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				51.42	255.24	1100.85	23.87	43.48	42.17	110989.20
				54.26	419.56	524.91	13.62	55.50	53.83	63323.38
				36.42	281.57	352.27	9.14	37.24	36.13	42497.11
				61.06	287.47	241.66	5.36	42.90	41.62	24926.51
				46.78	156.44	594.97	11.48	31.64	30.69	53392.49
				22.77	176.06	220.27	5.72	23.29	22.59	26572.10
				4.98	26.71	66.52	2.05	4.40	4.26	10166.19
				VOC lb	**CO** lb	**NO_x** lb	**SO_2** lb	**PM_{10}** lb	**$PM_{2.5}$** lb	**CO_2** lb
				47.72	246.70	1127.78	0.52	48.63	47.22	97,262
				88.00	465.19	2086.50	1.04	87.03	84.33	198,905
			Tons/year:	**0.18**	**1.02**	**2.56**	**0.04**	**0.16**	**0.16**	
			Metric tons/year:							**236**

Table 4. Fugitive Dust

Year	PM_{10} tons/acre/mo	acres	days of disturbance	PM_{10} Total tons	$PM_{2.5}/PM_{10}$ Ratio	$PM_{2.5}$ Total Tons
2018	0.42	10	180	37.8	0.1	3.8

Table 6. Construction Emissions Summary for 2018

YEAR	VOC T/yr	CO T/yr	NO_x T/yr	SO_2 T/yr	PM_{10} T/yr	$PM_{2.5}$ T/yr	CO_2 MT/yr
2018	**0.52**	**2.40**	**6.51**	**0.09**	**38.16**	**4.13**	**539**

Alternatives 2 and 3: Construction Assumptions

Project Name	Type (Renov or Const)	FootPrint (AC)	Grading (sf)	Site Prep - Excavate/Fill (CY)	Building Construction - Total Size (sf)	Building Construction- foundation footprint (sf)	# Stories	Paving - Surface area (SF)	Pavement type, vehicle or aircraft	Paving - HMA (CF)	Sidewalks (sf)	Gravel Work (CY)	Concrete Work -(CY)
Warehouse	New	0.1	6,308	350	6,308	6,308	1	631	Vehicle	315	315	117	156
Aircraft Hangar	New	1.7	75,186	8,576	76,424	76,424	1	7,519	Vehicle	2,506	3,821	1,415	2,359
Totals		**1.9**	**81,494**	**8,927**	**82,732**	**82,732**	**-**	**8,149**	**-**	**2,822**	**4,137**	**1,532**	**2,515**
Construct New Taxiway	New	3.4	150,000	22,222	-	-	-	-	Aircraft	-	-	3,704	16,667
Wash Rack and Power Check Pad	New	0.7	31,926	1,774	-	-	-	-	Aircraft	-	-	788	3,547
Parking Apron	New	3.5	150,318	22,269	-	-	-	-	Aircraft	-	-	3,712	16,702
Totals		**7.6**	**332,244**	**46,265**	**0**	**0**	**0**	**0**	**-**	**0**	**0**	**8,204**	**36,916**
Grand Total	-	**9.5**	**413,738**	**55,192**	**82,732**	**82,732**	-	**8,149**	-	**2,822**	**4,137**	**9,736**	**39,431**

All Construction
Equipment list from National Estimator, PACES and CALEEMOD information.
The Cumulative Hours of Operation is based on the productivity of the equipment or process.
Productivity of the Equipment is based on a number of sources including:
PACES (US Air Force Estimator) and 2012 National Construction Estimator (Craftsman Book Company 2012).
Additional sources for the productivity factor include: Henderson, Chris. Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects, and Builders. Version 2.2. 2008.
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